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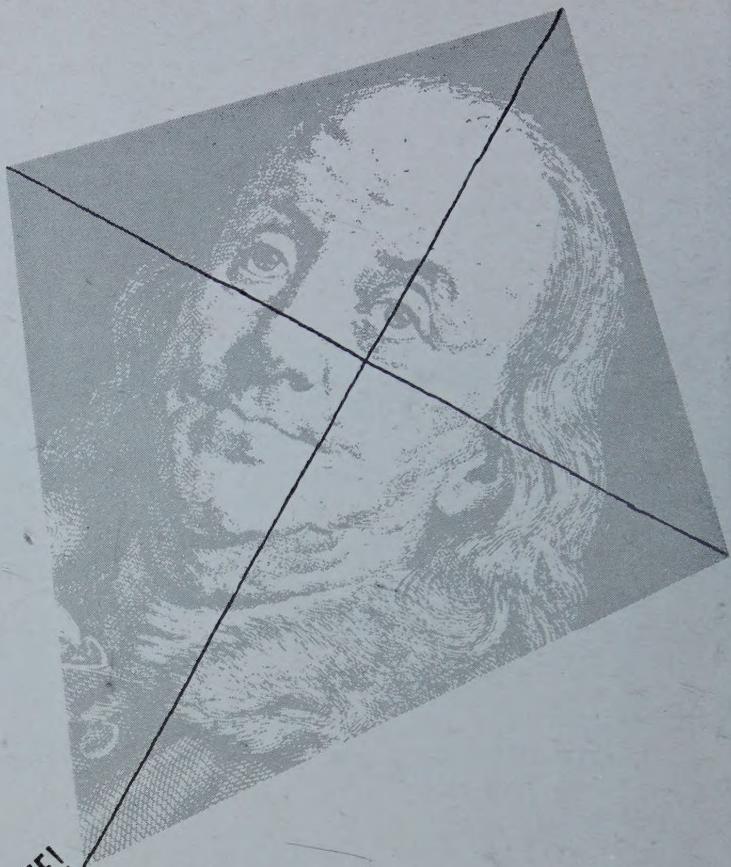
Open for Business — See page 5

What's Happening In Labor?

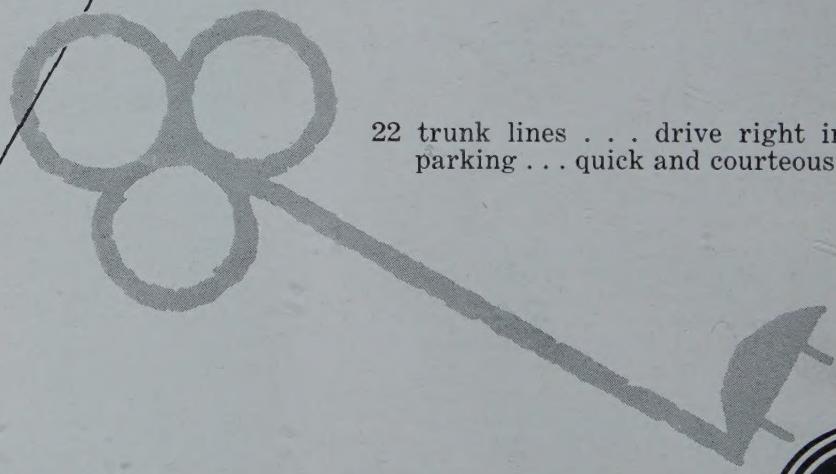
Making Tomorrow Today's Business

A Look At The Next 25 Years





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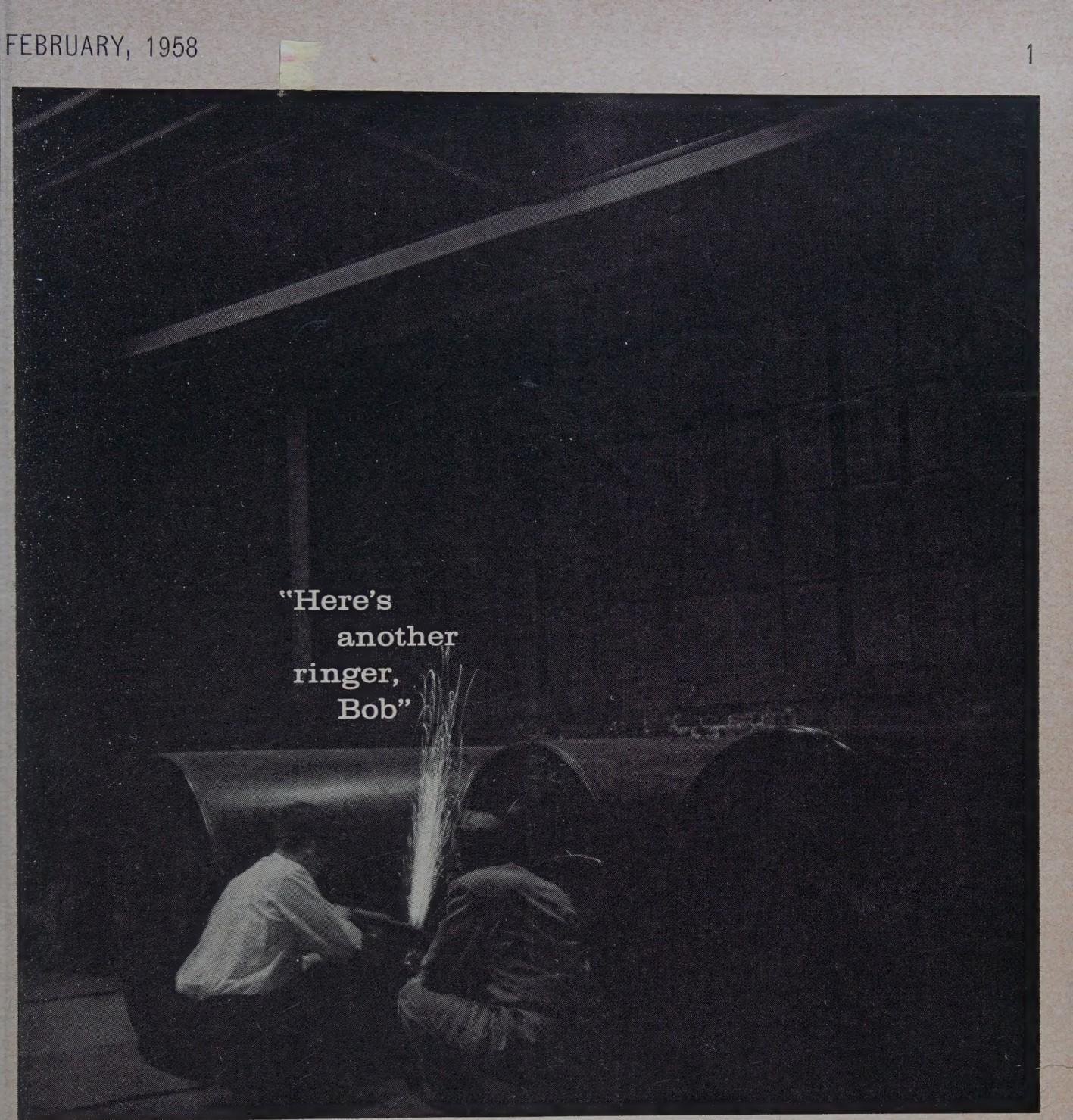
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"Here's
another
ringer,
Bob"

It was cold and dark in the shop that night. Everyone had gone but the foreman and Pete Clybourn, Inland mill representative, who was busy preventing a costly slowdown in production.

This company, a manufacturer of steel tanks, had run into some unforeseen trouble. They had inadvertently used a few pieces of the wrong specification steel in the manufacture of a section for a quantity of tanks. But in which particular tanks, nobody knew.

About 3:15 that afternoon Pete had stopped by on another mission and the foreman had mentioned his

problem. Pete immediately offered his services; then drove several miles across town to borrow a spark testing outfit. Back at the shop, it was well into the night before he finished testing the complete lot of tanks, in the process of which he uncovered three would-be troublemakers.

There are not many men today who can do the really competent job of spark testing that Pete did that night. We think it typifies a man who's conscientious, knowledgeable, thoughtful . . . the kind of man you're likely to meet when you do business with Inland.

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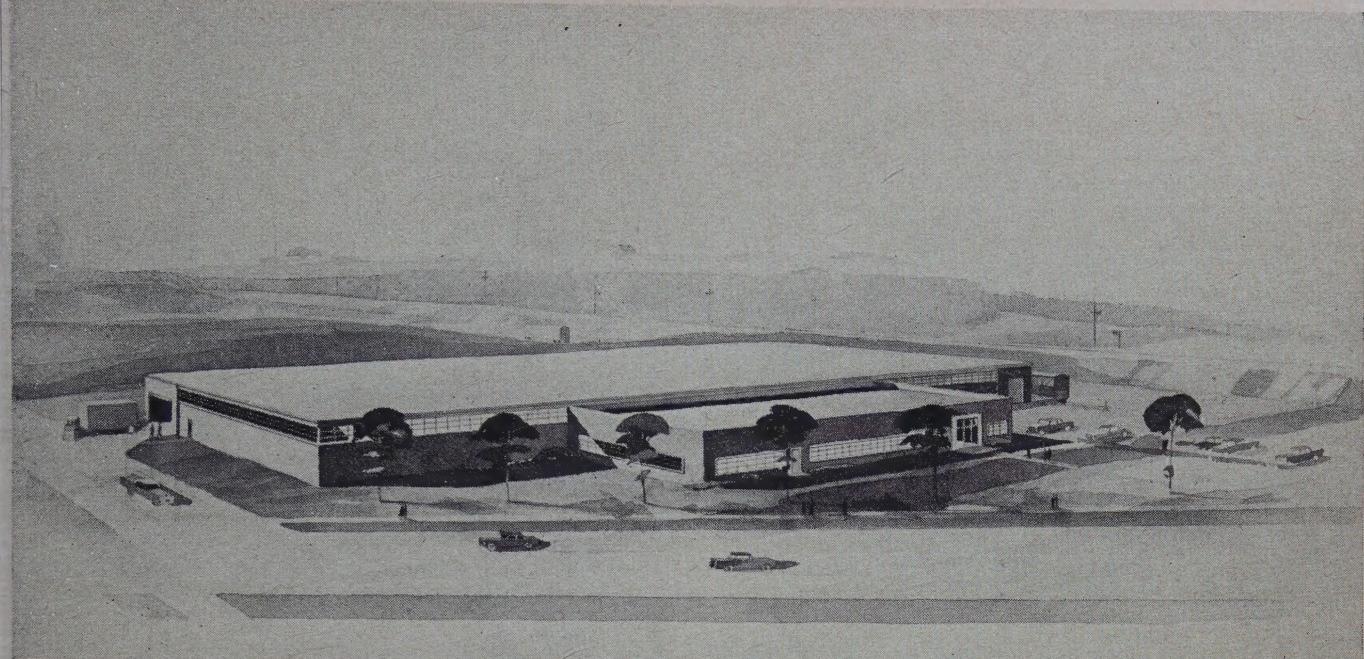
Chicago Business

	December, 1957	November, 1957	December, 1956
Building permits, Chicago	1,488	1,866	650
Cost	\$41,420,127	\$14,925,238	\$14,681,345
Contracts awarded on building projects, Cook Co. cost		\$57,920,000	\$92,474,000
(F. W. Dodge Corp.)			
Real estate transfers, Cook Co.	5,205	6,135	6,247
Consideration	\$4,098,572	\$4,252,707	\$6,008,223
Bank clearings, Chicago	\$ 5,145,292,673	\$ 4,624,814,915	\$ 4,932,790,878
Bank debits to individual accounts:			
7th Federal Reserve District	\$30,739,000,000	\$27,389,000,000	\$28,886,000,000
Chicago only	\$15,720,272,000	\$13,803,550,000	\$14,185,545,000
(Federal Reserve Board)			
Bank loans (outstanding) Chicago weekly reporting banks	\$4,209,000,000	\$4,138,000,000	\$4,022,000,000
Midwest Stock Exchange transactions:			
Number of shares traded	2,512,753	2,200,810	2,106,000
Market value of shares traded	\$70,450,824	\$65,319,453	\$67,064,655
Railway express shipments, Chicago area	1,151,230	908,324	1,322,640
Air express shipments, Chicago area	74,142	66,508	79,955
L.C.L. merchandise cars, Chicago area	10,712	12,369	13,786
Electric power production, kwh, Comm. Ed. Co.	1,782,209,000	1,695,326,000	1,757,151,000
Industrial gas sales, therms, Chicago	16,038,449	14,729,035	17,155,146
Steel production (net tons), metropolitan area	1,517,600	1,544,000	1,993,400
Revenue passengers carried by Chicago Transit Authority lines:			
Surface division	36,973,956	36,182,089	41,409,347
Rapid transit division	9,614,553	9,142,030	9,926,742
Postal receipts, Chicago*	\$16,657,644	\$13,514,052	\$16,878,161
Air passengers, scheduled, Midway and O'Hare airports			
Arrivals	393,534	380,593	325,333
Departures	413,969	398,236	348,152
Consumers' Price Index (1947-49=100), Chicago	125.6	125.6	121.0
Receipts of salable livestock, Chicago	470,119	417,543	481,976
Unemployment compensation claimants, Cook & DuPage counties	44,950	36,422	27,317
Families on relief rolls:			
Cook County	23,939	22,396	22,771
Other Illinois counties	15,322	13,436	13,858

* Postal department now reports in four-week rather than monthly periods. Comparable figure for 1956 is not available.

March, 1958, Tax Calendar

Date Due	Tax	Returnable to
1	Annual information returns by shareholders, officers and directors of foreign personal holding companies	District Director of Internal Rev.
15	Illinois Retailers' Occupation Tax and MROT return and payment for month of February	Department of Revenue (Illinois)
15	If total Income and Social Security Taxes (FICA) withheld from employee, plus employer's contribution in February, exceed \$100, pay amount to	
17	(March 15 is Saturday) File calendar-year Corporation Income Tax return and make full payment or pay first installment of 50% of unpaid tax (Form 1120)	
17	(March 15 is a Saturday) File return and pay Federal Income Tax withheld at source from non-resident alien individuals, non-resident foreign corporations, and non-resident foreign partnerships	District Director of Internal Rev.
		Director of Internal Operations, Internal Revenue Service, Washington 25, D.C.



Rendering of New Plant now under Construction for Teleweld, Inc.

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COMMERCE

Magazine

**Published since 1904 . . . by the
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February, 1958

Volume 55

Number 1

**Our
Cover**

Two new buildings were dedicated and officially opened for business in downtown Chicago during the opening days of February. They were: the Sun-Times Building (top on our cover), which rises nine stories above river level on a block-long site on the north bank of the Chicago River between Wabash and Rush Street; and the Inland Steel Building (lower, right), which towers 19 floors over the northeast corner of Dearborn and Monroe.

The Inland Steel Building is of particular interest to readers of COMMERCE because it is the new home of the Chicago Association of Commerce and Industry and, of course, COMMERCE. The CACI will occupy the first two floors of the ultra-modern stainless steel and glass skyscraper. An open house for its members and friends is scheduled for February 13, the day of the Association's annual meeting.

The structure is, of course, the headquarters of Inland Steel. Its staff of 530 employees occupy the topmost eight floors. Housed there are the company's top executive officers, and administrative and staff departments including sales, accounting, industrial and labor relations, raw materials and purchasing.

Inland was the first to move into the new building. White Weld and Company was second; The Association was third and another early tenant will be Skidmore, Owings & Merrill, who were architects and engineers for the structure.

Main occupant of the Sun-Times Building, of course, is the publisher of the Chicago Sun-Times. Ground for this building was broken in November of 1955 and occupancy began in late October, 1957. The dedication ceremonies of the building also marked the tenth anniversary of the Sun-Times. The \$15,000,000 plant was dedicated in the memory of the late Marshall Field, founder of the Chicago Sun and first publisher of the Chicago Sun-Times.

The building has a structural steel frame supported on caissons 10 to 12 feet thick, sinking to depths of 100 to 120 feet. Exterior walls have vertical mullions of stainless steel. The windows are joined by aluminum spandrels. The structure has a granite base.

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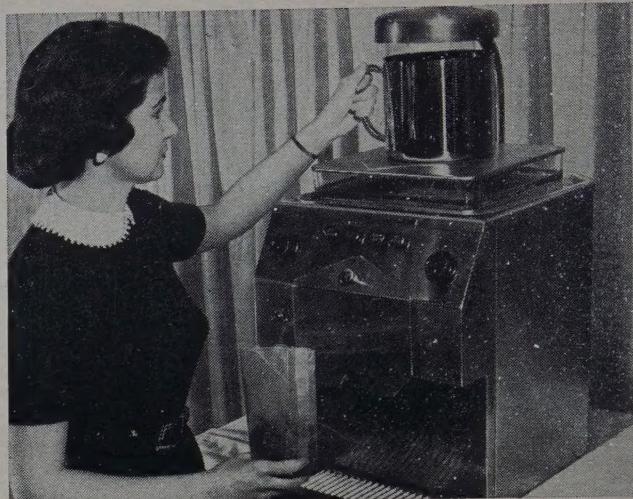
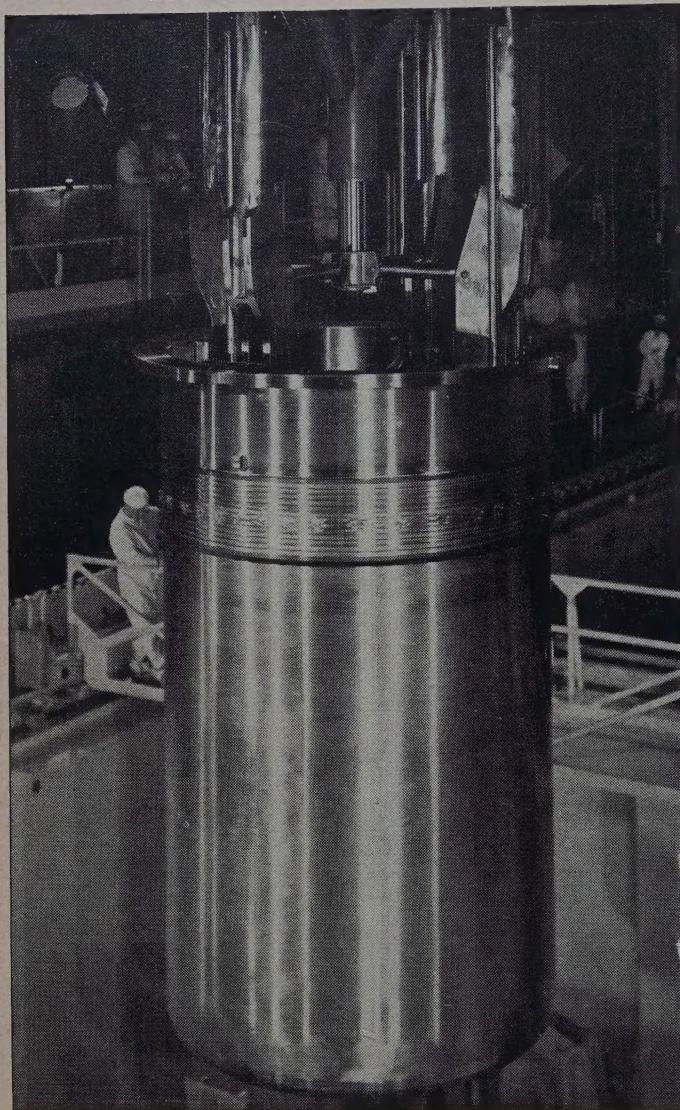
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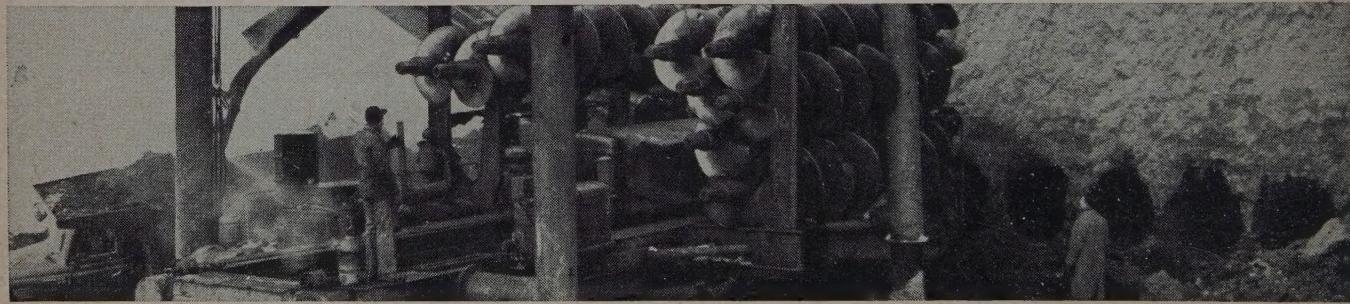
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First Automatic Teamaker. After years of research, the tea industry, the restaurant industry and a large food machinery manufacturer have perfected the first automatic teamaker. It dispenses hot tea, iced tea, hot water or cold water at the touch of a button. Like almost all commercial food equipment, it is made from Stainless Steel because Stainless resists corrosion, is easily cleaned and looks bright and new forever. Don't forget, you can buy Stainless Steel equipment for your kitchen, too.

The Heart Of The Atomic Reactor. The world's first full-scale atomic power plant devoted exclusively to serving civilian needs is now in operation at Shippingport, Pa., northwest of Pittsburgh. Here, the nuclear core, or charge of fuel, is being lowered into position. Inside the cylindrical barrel is the nuclear fuel assembly, approximately 6 ft. in length and over 6 ft. in diameter. The unit weighs 58 tons which includes the 14 tons of natural uranium surrounding 165 lbs. of highly enriched uranium "seed." The "hot" nuclear reaction takes place within the core, to drive a turbine generator of 100,000-kilowatt capacity. The core barrel, as well as some parts of the core itself, is made from ultra-high-quality steel.



Boring Work. Notice the 3½-foot-diameter holes near the man at the right. They penetrate through 200 feet of rock and coal. The big coal-mining machine operates just like a carpenter's auger. The coal "chips" are loaded directly onto the truck with a conveyor belt. Each auger is 17 feet long, and they are chucked together to make up one long string. Auger blades are made from USS COR-TEN Steel which has 50% more strength (yield point) than structural carbon steel, four to six times the resistance to atmospheric corrosion, and good resistance to abrasion.

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Watch the United States Steel Hour on TV every other Wednesday (10 p.m. Eastern time).

The Editor's Page

CACI In New Home

When this issue of COMMERCE reaches readers, the magazine and its publisher, the Chicago Association of Commerce and Industry, will be in spanking new quarters in the glittering new Inland Steel Building at 30 West Monroe street. The Association's offices are on the first and second floors of the beautiful stainless steel and glass skyscraper Inland has built to house its own general offices.

This will be the fourth location occupied by the Association in its long history. When founded in 1904, as the Chicago Commercial Association, the organization took offices in the Great Northern Building at 20 West Jackson. In May, 1912, larger quarters were occupied in the Otis Building, 10 South LaSalle street. The Association took over the entire twenty-third floor of the then newly constructed One North LaSalle Building in May, 1930. This has been its home for the last 28 years.

During that period the Association, like the community it serves, has made great strides. The companies who comprise its membership have almost doubled in number and its staff has been strengthened and expanded. Today, in fact, the CACI is ranked as the largest local chamber of commerce in the nation.

Members and their friends are invited to an open house following the Association's annual meeting on February 13. The officers, directors and the staff confidently expect this important occasion will inaugurate a new phase of growth and service to all the business and civic interests of Chicagoland.

Needed FRB Action

The Federal Reserve Board now has before it the recommendations of a number of leading banking and business organizations urging it to eliminate the two per cent differential in reserve balances against net demand deposits which it requires certain banks in the country's two central reserve cities, Chicago and New York, to maintain.

At present, central reserve city banks must maintain with their respective Federal Reserve Banks reserve balances against net demand deposits of 20 per cent. Reserve city banks are required to maintain reserve balances of 18 per cent. Country banks must maintain a reserve of 12 per cent.

The present two percentage points differential between central reserve and reserve city banks goes back to the system of redeposited reserves under the old National Bank Act.

Under that system, which pre-dated the Federal Reserve, national banks in New York and Chicago

were the ultimate depositaries of the reserves required to be kept by other banks in the national system. They were, therefore, required to keep an even larger percentage of their resources in cash as reserve against these deposited bank reserves.

In the 40-odd years since the establishment of the reserve system, there has been a sweeping change in economic and financial conditions. Our national economic and financial resources have greatly expanded and been widely dispersed. Many large and competitively important banks have grown up in other cities which now rank as important money and financial centers. In consequence, there has been a substantial decline in the total interbank deposits held by New York City banks and a marked growth in the percentage of total interbank deposits held by large banks in cities not classified as central reserve cities.

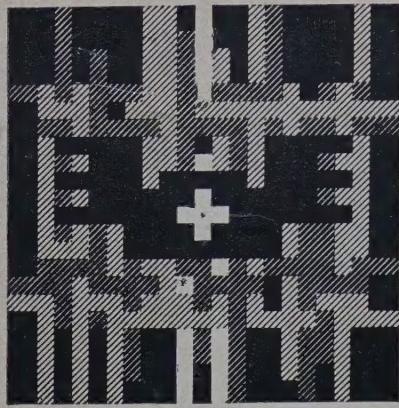
At the end of 1957, ten of the 20 largest banks in the country ranked by volume of deposits were located in the cities of San Francisco, Los Angeles, Detroit, Pittsburgh, Boston, Cleveland and Philadelphia. These banks and the cities in which they are located enjoy a distinct competitive advantage because of their lower reserve requirements than central reserve city banks in New York and Chicago.

Financial authorities are agreed that this is not only discriminatory but that the higher reserve requirement imposed on New York and Chicago banks add little if anything to the liquidity of the banking system or to the effectiveness of credit control by the Federal Reserve.

Of the 62 banks in the city of Chicago which are members of the Federal Reserve System, 14 are central reserve city banks and must maintain reserves of 20 per cent. This two per cent differential freezes a substantial portion of their loan and investment base, putting them at a competitive disadvantage, reducing their earnings potential and correspondingly their ability to serve the economy of the community. As of December 31, 1957, substantially more than \$100 million in additional lending or investment potential was so frozen for these 14 Chicago banks.

The Federal Reserve Board has the authority to end this discrimination and place the reserve requirements of central reserve city banks on the same basis as those of reserve city banks. To do so now would not only be consistent with the present policy of the board toward easing money and credit but would have an especially constructive effect on the area's economy as well.

Alan Sturdy



More than 2300 exhibitors from 17 professional groups give a complete panoramic view of the stunningly wide scope of Swiss production.

Information, brochures and catalogues are obtainable from Swiss official representations in the Chicago area from the Consulate of Switzerland, 75 East Wacker Drive, Chicago 1, Ill.

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Here...There... and Everywhere

• **Chicago Building Outlook**—The residential building outlook for 1958 is better in the Chicago area than in any other part of the country, in the opinion of Tom Lively, president of Centex Construction Company, Inc., which is in the process of erecting 6,000 houses in Elk Grove Village northwest of Chicago. "The Chicago area is the strongest market in the country for new homes, and we foresee this condition as continuing for a long period ahead. The pattern of industrial growth, the income level and living standards of families, and the progress now being shown in metropolitan area planning can point to no other conclusion," Mr. Lively said.

• **Packaged Nuclear Laboratory**—Colleges can now set up their own nuclear engineering programs with a new system offered for \$30,000 by Nuclear-Chicago Corporation. Heart of the system is a packaged nuclear laboratory. Other parts include: operating instructions; detailed student and group experiments; and help, by Nuclear-Chicago, for each institution in getting AEC nuclear materials and working funds. The small reactor supplied with the system is a water-moderated, natural uranium, subcritical type.

• **Uses Energy of Gases**—An electrical generator can now produce power directly from chemical energy of gases. Its fuel cells require no gasoline, steam, or hand driven engine to generate electricity. According to National Carbon Company, chemical energy of hydrogen and oxygen is converted directly to electrical energy. The secret of the fuel cell's success is chemically treated, hollow, porous carbon electrodes, through which gases enter the cell.

• **Building Photo Contest**—Prize money of \$2,000 awaits the top two

photos of Chicago's first glass-and-aluminum skyscrapers. Metropolitan Corporation of America, 135 S. La Salle Street, Chicago, is sponsoring the photo contest. The subjects for the event are the apartment buildings located at 860 and 880 Lake Shore Drive; the Esplanade Apartments, 2801 N. Sheridan Road. Details of the contest, which closes May 1, 1958, should be obtained directly from Metropolitan.

• **Wanted: Mechanics**—More than 40,000 new garage mechanics must be trained in 1958 if the nation's 64 million motor vehicles are to be maintained in good driving condition, according to Charles E. Heitman, president of Carter Carburetor division of ACF Industries.

• **Life Insurance Peak**—An estimated \$66.5 billion of new life insurance was bought in 1957, the highest level yet and \$11 billion more than the previous year. Ordinary life purchases accounted for about two-thirds of the total. Group life insurance purchases were projected at \$14 billion.

• **Small Jet Engine**—General Electric Company has developed a small jet engine for airplanes, weighing only 250 pounds and delivering thrust of 1,050 horsepower. The lightweight gas turbine engine is called the T58, and has a turboshaft engine 16 inches in diameter and 55 inches long. The development is seen as a major step towards reducing weight and increasing efficiency of aircraft engines.

• **Rubber Use Increases**—American rubber consumption in 1958 is expected to exceed 1957 consumption and approach the record year of 1955. J. W. Keener, president of B. F. Goodrich, estimates 1958 consumption of 1.5 million long tons,

compared with 1,480,000 in 1957 and 1,530,000 in 1955.

Per Capita Meat Consumption
Off — The average American consumer ate about 159 pounds of meat in 1957 — his share of the more than 7 billion pounds that were produced, according to the American Meat Institute. Total production was only slightly lower than the record 28 billion pounds produced in 1956 but, with the rapidly increasing population, per capita consumption dropped about eight pounds. The institute expects total meat production in 1958 to be about the same as in 1957 and, since there will be more people, per capita consumption to drop about a pound in 1958. Slightly more than half of the 1957 production was beef, about 30 per cent was pork, and the balance was veal and lamb. A small decline in beef production in 1958 is expected to be offset by an increase in pork production.

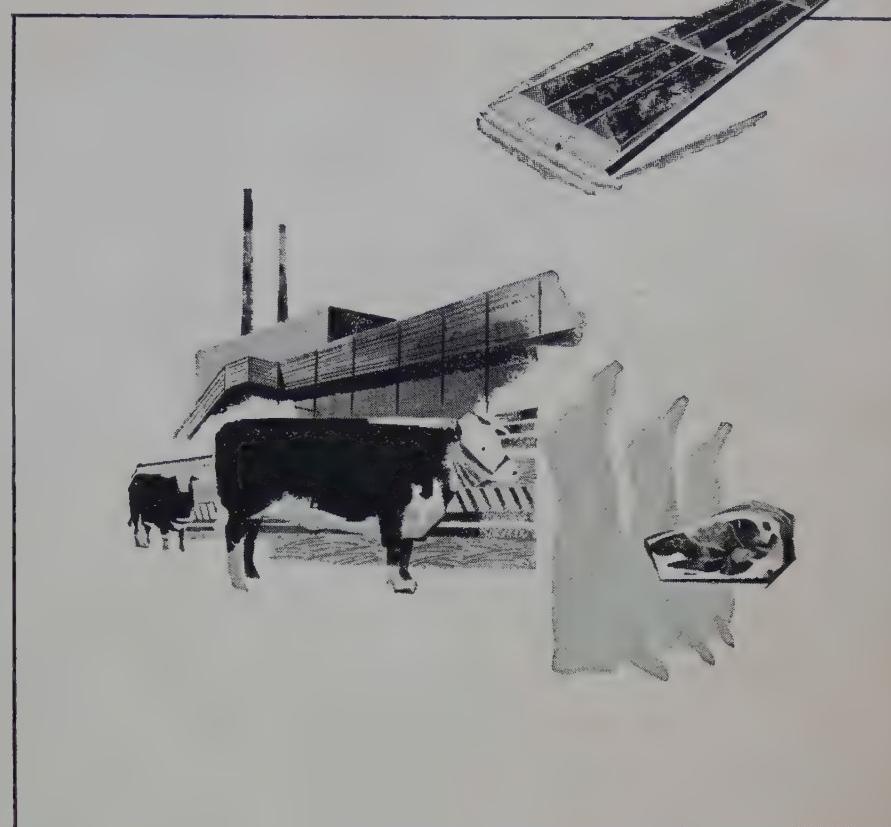
Rising Tire Sales — Tire industry sales in 1958 will approach the all-time high established in 1955, according to E. F. Tomlinson, president of B. F. Goodrich Tire Company. He estimated industry sales in 1958 will total 112,735,000 pneumatic tires of all types, compared to 105,300,000 in 1957. The record year for the industry is 1955, when 114,400,000 tires were sold. Shipments of passenger car tires, including original equipment on new cars and replacements for old tires on present cars, are expected to total about 83,000,000 units in 1958. This compares with 91,050,000 in 1957 and the record 93,668,855 in 1955. Replacement tire sales in 1958 will increase nearly four per cent over estimated \$1.5 billion sales this year.

The tire executive estimated that there are approximately 56,100,000 passenger cars registered today and predicted that by the end of 1958 there will be 58,400,000 cars registered in the United States. "Today, 22 per cent of American families are two-car owners and in another ten years, 20 per cent (one in every five) will have at least two cars," he said.

Shipments of truck and bus tires in 1958 will be about 14,400,000 units, an increase over 1957 shipments of 13,750,000, but slightly under the 1955 record of 14,766,392. Farm and implement tire shipments will total 3,400,000 in 1958, com-

(Continued on page 25)

MEAT PACKING



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What's Happening In Labor?

By A. H. RASKIN

Here's a timely, and highly controversial, discussion of the labor picture that merits consideration

WITH the first two rounds of the 1958 bargaining tussle behind him, Walter P. Reuther has a long lead on points over the Big Three auto manufacturers. He scored an initial victory six months ago in what he likes to call "the battle for men's minds" by his suggestion that the auto companies cut \$100 from the price of their new cars as an anti-inflation measure.

The companies quite properly noted that Mr. Reuther was committing himself to nothing more solid than a promise to consider shaving down preliminary demands that traditionally have so much of a "pie in the sky" quality about them that they could well represent America's basis for claiming that we were really far ahead of the Russians in voyaging into outer space. Nevertheless, the net effect of their negativity was to leave Mr. Reuther well ahead in the first exchange.

He has vastly extended his lead

in this preliminary realm of psychological warfare by the unexpectedness of his specific bargaining proposals. The critics who had been prepared to tear him apart on the issue of a shorter work week were dumbfounded when he jettisoned this demand on the basis that sputnik had made plain the need for maximum utilization of our resources to outpace the Soviet Union.

Let's Look at the Books

Then in a fresh expression of the audacity he has shown since his earliest call for a "look at the books" right after V-J Day, this one-time Socialist made himself the champion of one of management's most cherished ideas for stimulating employee interest in the success of a business — profit-sharing.

What's more, he threw in the additional gimmick of cutting the consumer in on a slice of the profits, thus torpedoing industry's favorite line that labor is always seeking to hog all the fruits of improved productivity for itself and so making it impossible for the public to benefit through lower prices.

In essence, the U.A.W. profit-sharing idea is not vastly different from the 50-50 stock purchase deal General Motors and Ford offered their 500,000 employees as an alternative

to the so-called guaranteed annual wage three years ago. The underlying purpose was to establish a sense of partnership that would give the workers more incentive for stepping up productivity and helping the enterprise prosper.

What the cut-off point in a profit-sharing system should be is a matter for negotiation in the same manner that the stock purchase plan would have been if the union had not insisted that granting of the supplemental unemployment benefit demand would have to precede any discussion of the joint ownership experiment. Mr. Reuther said he would be happy if every union member bought \$20,000 worth of company stock, but the offer was withdrawn when the union would not give way on wage guarantees.

Such discussions represent a tremendous expansion of what we have traditionally considered the appropriate boundaries of the bargaining table. Walter Reuther unquestionably is a man determined not only to broaden the table but to knock all the walls out of the conference room. It would be logical enough, once the distribution of profits became a matter for negotiation, to contend that sales and production policy and everything else that went into the creation of

The author is national labor correspondent for the New York Times. This article is a digest of his address before a session on "Labor Relations Pressures in 1958" at the National Industrial Conference Board's meeting on Personnel Administration January 16-17, 1958, in New York.

Will the auto union strike again this year and bring back scenes such as this 1950 rally of Chrysler workers? The author says the 1958 strike total of man-days lost may well prove to be the heaviest in the Eisenhower era. United Press Photo

profits were relevant to such a discussion.

Unfortunately for Mr. Reuther, it will take something more than mental agility and publicity techniques that combine the most persuasive features of Union Square and Madison Avenue to win a strikeless victory in the payoff rounds of his bargaining set-to this spring. The slack demand for automobiles makes it seem unlikely that he will be able to move any of the Big Three onto the front burner with the same sizzling fire he lit under Ford when he won the guaranteed annual wage in 1955.

First Industrywide Shutdown

The companies, still smarting under the outcome of that campaign, have given many signs that they will not step away from a fight this year. Their accent on Mr. Reuther's "monopoly power" raises a suspicion that they may decide to set aside their own intra-industry antipathies and band together in an all-for-one and one-for-all bargaining arrangement of the kind the steel companies formed two years ago. That could mean the first industrywide shutdown in auto history and an attendant reduction in the U.A.W.'s ability to exert its usual competitive squeeze on the manufacturer it considers most vulnerable.

Mr. Reuther may find himself in trouble even before he tangles with the auto companies. The U. A. W. and the International Association of Machinists are in process of preparing a joint bargaining program for presentation to the major aircraft producers in February and March. This calls for an across-the-board pay increase of six per cent severance pay provisions, improved union security, cost of living escalators and other benefits. In this industry, too, the unions are likely to find the going tough this year. Indeed, there seems to be a general mood of toughness in employer ranks, generated in part by slack business conditions and in part by a belief that the Senate hearings have cost labor most of its public support.

Even the merged labor federation is having its own internal labor problems. Its organizers have asked the National Labor Relations Board to force their bosses to recognize their union and they are getting all the classic evasions that employers

have used to dodge unwelcome unions in more orthodox collective bargaining situations.

The fear of unions and employers alike that the expulsion of the International Brotherhood of Teamsters would start a new civil war on the labor front has proved almost totally unfounded. Almost the only place there have been reprisals by the teamsters has been in situations involving the Retail Clerks International Association, and the feud involving that union began long before the ouster.

Truthfully the teamsters are a union with no one at the steering wheel. Dave Beck has been sentenced to go to jail and Jimmy Hoffa seems convinced that the government will never let up till it gets him sentenced too. This business of sitting around courtrooms, knowing that if



A. H. Roskin

one beats this rap there will be another and another and another to face, is a type of torture that even a man as tough as Hoffa cannot withstand for long. The conviction of Johnny Dio and Johnny McNamara and other old Hoffa lieutenants simply accentuates the sense of doom that hangs over the whole teamster high command.

Hal Gibbons, Hoffa's braintrust, has a shaky hold on the St. Louis joint council as a result of a palace revolution by some of the Hoffa supporters in his area. His fate is interesting because he is in many ways the Walter Reuther of the teamsters and the author of all the literature so ardently circulated by the Hoffa forces that Reuther was their real enemy. Now he himself may be on his way out, instead of

taking over the presidency when and if Hoffa went to jail.

In New York City, with its 125,000 teamsters, the anti-Hoffa forces are hopeful they can knock out Johnny O'Rourke as president of the Joint Council in the annual elections. Elsewhere the trend seems to be strongly back toward the old local baronies that used to assert their will so inexorably in their own regions with no concern for the dictates of Dan Tobin or the international office. The end result of all the purges may be a reversal of the whole trend toward centralization and national bargaining that began with Dave Beck and was carried forward so aggressively by Jimmy Hoffa.

The 1958 strike total may well prove the heaviest in the Eisenhower era. However, there is no chance it will even remotely approach the 116,000,000 man-days of lost work time recorded in 1946, the first post-war year. Last year's 13,000,000 man-days of strike loss represented only one-tenth of one per cent of available work time. This was equal to two hours in an entire year for the average worker, or less time than many workers devote to coffee breaks in a single week.

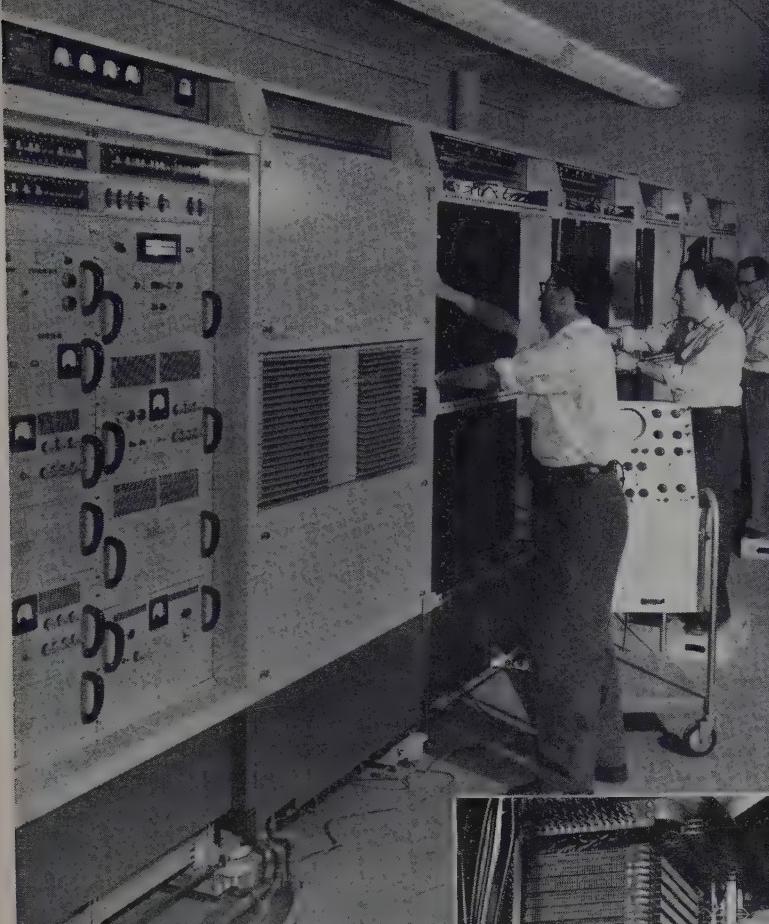
Slugging Out Deplored

The probability is that this year's total will be under one-half of one per cent, as against the 1.4 per cent figure for 1946. Needless to say, the relatively microscopic nature of this ratio does not provide a basis for complacency about the economic waste entailed. Tiny strikes in strategic areas can cause intense hardship, and certainly any step back toward a slugging out of labor-management differences is to be deplored.

But labor peace achieved through collusion at the expense of the public or through the surrender by labor or management of basic rights is destructive of true industrial democracy — indeed, of democracy itself. In too many instances we carry our deification of stability in industrial relations to a point that stifles the free choice of workers and eventually provokes such discontent that we wind up with chaos as the fruit of our prized stability.

Many have read with admiration

(Continued on page 22)



By

WALTER W. FINKE

Datamatic's new \$2.5 million electronic data processing system can add 4,000 sets of 11-digit numbers per second. It can also compare 5,000 sets or multiply 1,000 sets as fast. Above and right engineers check its innards



Making Tomorrow Today's Business

THREE is no escaping the fact that our highly automated economy has put new and severe demands on today's executive. Sheer bigness, product and market diversification, the automation of production—all of these have added new

problems, new uncertainties, new inflexible considerations.

To cope with these mushrooming complications, to keep from getting lost in a labyrinth of detail, today's executive needs less rather than more volumes of facts. But he needs specific usable facts. Data and facts that are current as of the moment he receives them; facts that simplify the complex inter-relationships of the various aspects of his business.

In short, he needs a tool and a technique that can reduce that host of factors, considerations, and alternatives involved in the decisions he must make, to terms that he can understand and rely on as guides.

Operations Research, a technique of analysis which developed during and after World War II, can fulfill that need. It is essentially a method of studying the operation of a system. Using mathematical analysis,

The author is president, Datamatic, a division of Minneapolis-Honeywell Regulator Company. This article is a digest of his address before the American Management Association's special finance conference on Operations Research.

it seeks underlying principles and develops conclusions which indicate the probable results of various courses of action. Its most useful application is to complex problems where many factors are involved and where the elements of a problem can be measured and described in quantitative terms.

Utilizing all applicable scientific tools, it provides executives with integrated facts that collectively form a quantitative basis for decisions regarding operations under their con-

tral. It also offers an opportunity to close a serious gap in our administrative approaches spotted some time ago by Dr. Edward H. Litchfield, former dean of the Graduate School of Business and Public Administration at Cornell.

He said: "Our present thinking has a fractured quality about it . . . parts of administration have concerned us more than the whole." He points out that in addition to knowing these parts, we must understand the characteristics and attributes of administration as an overall, integrated activity.

The support of Operations Research — the scientific method — will move us to a sounder comprehension of administration in its broadest sense. It is perhaps the best developed and most important aspect of the trend toward industry's use of scientific analysis. It provides the approach, the technique or the methodology for upgrading our decision-making processes, our adminis-

trative skills and all that is related to them.

But we still need the actual "tool" to translate this concept from the theoretical to the practical, to bring it from the laboratory to the front office.

Today, we have that tool. It is the electronic computer — particularly those of the large-scale variety. They are tailor-made for this job because of their speeds and flexibility, and their enormous capacity for digesting and integrating the tens of thou-

"brain" regularly computes general accounting records, financial reports, departmental expenses, production cost reports and plant service accounts. For marketing strategy, the computer prepares statements of sales, cost of goods sold, gross profit by products, over-all sales analysis. It also processes property accounting records, computes dividends, employee bonuses, pension reserves. And the company is looking to the day when the computer can be used to handle data on materials and finished goods, return on investment by product groups, and budgetary control and payroll.

Giant Nerve Center

Another leading American company soon will be operating on data transmitted by what is, in effect, an electronic communications system, with a giant computer as the nerve center. Some 12,000 miles of leased wire will link plants in 51 cities with the central data processing center. Tied together will be plants, laboratories, sales offices, warehouses, divisional headquarters, and executive offices. These will feed financial and production data to the center, where it will be instantly summarized for all levels of management. Involved will be data covering production volume, sales billings, and other corporate statistics.

Another manufacturing firm plans to feed incoming orders to a large scale computer and have it explode each order into the many parts required to carry it through — the orders on the factory, on the assembly line, inventory, billings, and purchase requisitions to replenish inventory levels.

One of the major auto makers used a computer and Operations Research techniques to work out a program that told its management the cheapest distribution pattern from plant to dealer. Some 8,000 unknowns went into a programmed study of plant production schedules, orders, inbound freight costs, assembly plant production costs, and, of course, profit margins.

But these developments only give us a peek at what is ahead. In looking toward the newer horizons, toward the almost limitless future for these new skills and "tools," how



Walter W. Finke

sands of individual facts and data which constitute the raw material for decisions in the operation of a business.

Too many people mistakenly take the measure of the big computer by its abilities to perform such basically routine chores as payrolls, billings, and the like. As necessary as the computer is to the improvement of efficiency and elimination of human error, that role doesn't begin to tap the great potentialities of this tool.

Many companies are making a sharp breakaway from the already conventional uses of these "brains," and their steps indicate the trend of the evolution of the scientific approach to management. One large corporation applies its "brain" or computer to the acceleration of management policy and decision-making by speeding up the flow of pertinent data.

For example, in addition to conventional technical calculations, the

(Continued on page 26)

A Look at the Next Twenty-five Years



William C. Bober

THE American economy, facing the greatest era of economic growth this country has ever seen, is headed for misty heights that our generation can barely discern. But the beginning of this upward climb is clearly visible, and not far off.

All signs indicate that we will enter another boom period around 1962 or 1963 that should continue for at least a decade, barring a nuclear war which seems less and less probable because it would be so suicidal for all mankind. No business ups and downs in the meantime can stop it.

It should be a bigger boom than the one which followed World War II. Far-seeing business organizations already have it charted and are preparing for it. Statistical projections of population growth, well established trends toward higher living standards and other data on improved products and technological methods, all spell b-o-o-m. The next five years should show more normal progress than in the past five years, barring unforeseen Cold War developments. Business will gradually pick up speed in the early 1960's and as it gains momentum and distance over the years, most American families will find they have more disposable income than they ever had before, more time for leisure and more comforts in living.

To keep all this in perspective, it is necessary to consider the world situation. Two colossal facts will continue to dominate every phase of world affairs during the next 25 years and beyond: 1) a spectacular continuing increase in world population, and 2) an even more spectacular rate of technological progress.

Twenty-five years from now—in 1983—if no nuclear war intervenes,

the world will have at least a billion more people than today. The United States alone will have 80,000,000 more. This is the equivalent of adding to the American stateside market the combined present populations of England, Spain, Norway and Sweden. (Canada by that time will have a population of 30,000,000.)

To provide all that it takes in capital and consumer goods just to supply the needs of this vast number

of additional people, at the present American standard of living, would by itself immensely stimulate our economy. But American living standards by 1983 will, of course, be vastly higher than they are even today. Technological progress assures it.

250,000,000 People

Within the next 25 years, or about 1983, the United States will have reached a population of around a quarter billion—250,000,000 people, swarming even more than today with children and young folks at one end of the age-composition scale, and with oldsters over 65 at the other. These oldsters will live much longer than their counterparts today, as new wonder drugs and the science of geriatrics forge ahead.

There will be at least 27,000,000 more people in the prime productive age groups, equipped with more labor-saving machinery and electronic devices than we even dream of today. Improved technology will make increased production possible in less time.

The United States will be operating a trillion-dollar economy. That is, it will be producing a thousand-billion dollars worth of goods and services each year. This will represent both an enormous increase in

This year Johns-Manville Corporation is observing its 100th Anniversary as a business organization. In planning for its second century of operation the company sent its senior economist, William C. Bober, on a 14-month coast-to-coast economic survey to determine something of the shape of things to come. This article summarizes his management reports on economic trends that will affect every business, every home owner, wage earner, and investor during the next quarter century.

Mr. Bober visited many sections of the United States and parts of Canada in assembling detailed economic data, making grass-roots studies, computing statistical projections, and confirming trends in gathering material for this story. His travels took him to large cities such as Boston, New York, Chicago and Los Angeles; and to smaller ones such as Hell's Canyon, Idaho; and Grand Coulee, Washington; and into Canada to such spots as Montreal, Quebec; Moose Jaw, Saskatchewan; and Victoria, British Columbia. In all he visited over 30 cities.

(Continued on page 36)

Business Highlights



Susi Petersen is a pleasant reminder that the 25th annual Chicago National Boat show, sponsored by the Outboard Boating Club of America, will be held at the International Amphitheater February 7 through 16. Susi, incidentally, is demonstrating a new finger-tip touch Bendix power steering system for big boats



Left to right: John A. Barr, the chairman and president of Montgomery Ward & Company, pushes a button on his firm's new IBM Data Processing system for the benefit of William C. Mair, IBM vice president, and Charles J. Kushell, Ward's financial vice president. Wards will use the new installation for financial and inventory reporting and control



The above are two scenes from an industrial motion picture produced by Morton Goldsholl Design Associates of Chicago on behalf of Kimberly-Clark Corporation's new latex impregnated printing paper, Texoprint. The 12-minute, 16 mm sound, color movie is a series of scenes like the above accompanied by loud but euphonious music. It's an unusual film but does get across its message, Texoprint



Architects' drawing of the proposed \$750,000 eight-story office building, "75 East Walton Building," which will be constructed at Walton Street and Huguelet Court. The front of the building features three-foot-offset window exposure, which will be entirely of glass and stainless steel, with brilliantly colored metal framing.



Colorful costumes and Mexican music herald the inauguration of American Airlines' nonstop flights between Chicago and Mexico City January 5, 1958. Three of the passengers on the initial flight were (left to right in foreground): Mrs. Hanns Teichert and Alderman and Mrs. John E. Egan



Above, left to right: Stewart S. Howe, President of the Chicago chapter of the Public Relations Society of America; Gardner H. Stern, president, Hillman's, Inc.; Fairfax M. Cone, Foote, Cone & Belding advertising agency; and Julian S. Baird, Under Secretary of the Treasury; pictured with the awards given to Mr. Cone for outstanding service to the Community at a recent PRSA meeting



Closing the gap in Chicago's biggest and highest cantilever bridge. The structure, a part of the Calumet Skyway, rises 215 feet in the air over the Calumet River and is 2,458 feet long. According to U. S. Steel officials nearly 9,000 tons of structural steel will go into the bridge

Employers Play It Cool; Turn to Air

Air conditioning in Chicago Loop jumps 200 per cent in ten-year period



Electronic cells work like a magnet to collect airborne dirt

Minneapolis-Honeywell's "dream control center" — a 21-inch TV screen that enables the building engineer to literally see the temperature situation in any part of a building



By PHIL HIRSCH

HERE'S a small machine shop in the South in the unusual position of having employees who insist on coming to work early. The day shift workers, even though they don't have to start until 7:30 a.m., arrive around 6:30 a.m. The night crew begins showing up right after lunch, although they don't go to work until 4 p.m.

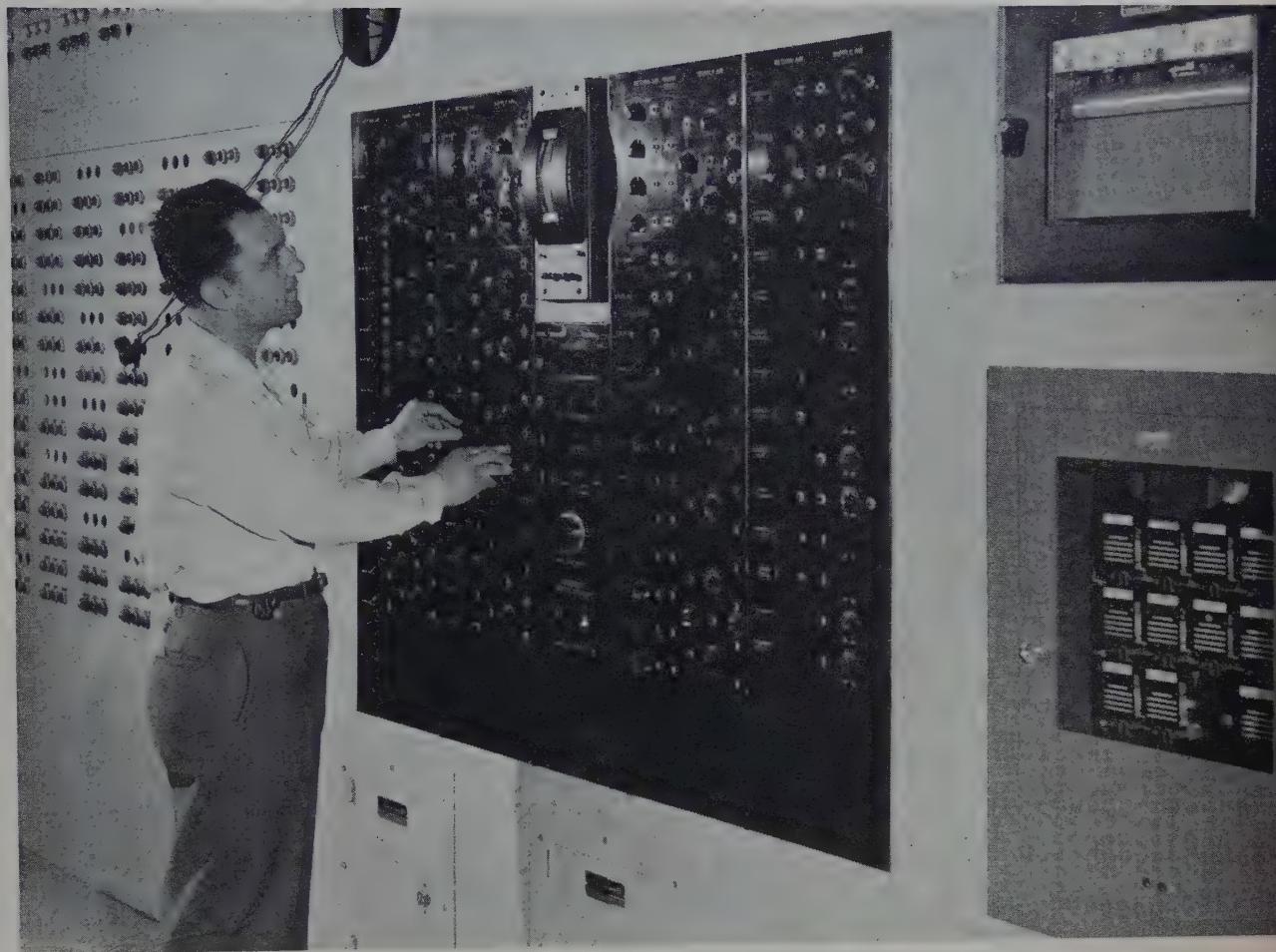
The employees aren't unusually eager, it's just that the plant was completely air conditioned a few years ago. Before the company installed the system, absenteeism ran as high as 35 per cent during hot weather.

Many other firms, located on both sides of the Mason-Dixon Line, have obtained similar results by air conditioning their production floors and offices. They've found that year-round "comfort conditioning" boosts morale, increases output, prevents deterioration of the product, and reduces housekeeping costs. Even more important, perhaps, air conditioning has become a potent lure for attracting job applicants in a tight labor market; also, many firms have found that it improves their competitive edge, especially in today's buyer's market.

Apparently these benefits are contagious, for many firms, large and small, in virtually every industry, have been spending substantial sums in recent years to air condition their plants and offices. Take Chicago, for example:

Industrial and office building installations here have increased about 175 per cent in the past ten years according to the city's department of

Conditioning to Keep Employees Happy



Control center for heating-air conditioning system in 41-story Prudential building enables maintenance personnel to supervise temperatures throughout the entire building from a central location. The Minneapolis-Honeywell system, marked two firsts—the first application of electronic controls of heating and air conditioning in a modern skyscraper, and the first time that temperatures throughout a major building could be checked through one central control panel.

water and sewers. Corporate Chicago had approximately 108,000 tons of air conditioning in operation in 1947; by comparison, at the end of 1956, there were 296,000 tons on the job ("ton," as used in the refrigeration industry, is a measure of cooling capacity, not weight). The amount of air conditioning in the Loop rose from 26,800 to 81,000 tons during the same period, a gain of slightly more than 200 per cent.

Water-cooled Equipment Only

These figures cover only water-cooled air conditioning equipment, which, for the most part, are large (25 tons and over) units that cool the whole building. The present boom in industrial and office building air conditioning is largely restricted to such "central plant" equipment. Air-

cooled room-size units, although numerous, handle only a relatively small part of the total industrial and office cooling load.

A good many more central cooling plants are going to be installed in the next few years, believes H. H. Gerstein, the city's assistant chief water engineer. He estimates that by 1960, there will be about 560,000 tons of water-cooled air conditioning in operation throughout the city. Of this amount, about 150,000 tons will be concentrated in the Loop. This will be enough to cool approximately 75 per cent of all downtown office space, he reports.

Lending substance to this estimate is the fact that within the past few years, a number of Loop office buildings have installed, or commenced to install, central air conditioning systems. Among them are:

Board of Trade, 333 N. Michigan, Inland Steel, Esquire, and 309 W. Jackson buildings. The Building Managers Association of Chicago has estimated that between 1946 and 1955, the amount of air-conditioned office space in the Loop rose from 5 to 25 per cent of the total. (Air conditioning is the process of treating air so as to control simultaneously its temperature, humidity, cleanliness and distribution to meet the requirements of the conditioned space.)

Changing Picture

According to E. H. Norling of General Electric's air conditioning division, "less than one per cent of the industrial plants in the United States are air conditioned." But, he

(Continued on page 34)



How much of the world can

You might know your own hometown like the back of your hand.

But put your finger on any town—even a few miles away—and you're apt to be a total stranger.

For instance, could you really spot a warehouse bargain in Seattle? Would you know what problems you'd face in staffing a plant in Dallas? Do you really know all the ins-and-outs of getting raw materials out of Italy?

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*...well named,
the "Continental"*

**CONTINENTAL ILLINOIS NATIONAL BANK
AND TRUST COMPANY OF CHICAGO**

What's Happening In Labor?

(Continued from page 12)

the splendid series of monographs issued some years ago by the National Planning Association on "The Causes of Industrial Peace." And, of course, one of the cardinal themes through the entire series is the idea that a strong secure union is one of the requisites for a productive, harmonious relationship.

This is a virtuous notion, and one that has given rise to many, many constructive associations of great benefit to workers, and the community. But occasionally the application of this maxim becomes the vehicle for keeping workers chained to a union that has lost their confidence. When that happens the evil perpetrated in the name of stability can become terrifying.

We have recently had a sample of that in the New York subway system. The practitioners were men of intelligence and good will, schooled in the best tenets of liberal labor philosophy and actuated by a sincere belief that the road to efficient, strike-free operation of the city's

underground lifeline, lay in the extension to the dominant union of transit workers of the maximum sense of security.

Yet in the application of that philosophy these well-intentioned administrators found themselves descending from one noisome device to a worse one in an attempt to stifle employee uprisings against the union to which they had accorded monopoly representation on the strength of a showing four years ago that it had the backing on an overwhelming majority of all employees.

The end result was a record reminiscent of the worst turned up by the LaFollette Committee in its inquiry into union-busting techniques in private industry two decades ago — the bugging of union offices (something new since Pearl Bergoff's day), the employment of full-time labor spies, the jailing of strike leaders, the payment of bribes to strikebreakers.

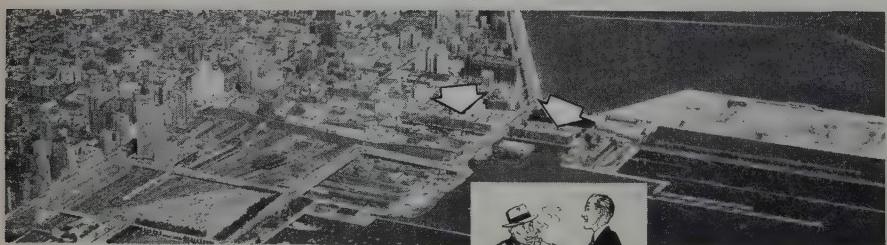
These actions, aimed at rebels against an established union, drew

no protest from the official agencies of organized labor. On the contrary, the full force of these agencies was concentrated on shoring up the established union, even though a new election raised substantial doubt that a majority of the workers still wanted it as their spokesman.

It is not my purpose to argue the rights or wrongs of the entire episode from the standpoint of the public interest or even the material welfare of the subway workers. What concerns me is whether we are not getting away from the concept that George Meany stresses so well — namely, that unions are workers' organizations. They belong to the workers, not the workers to them.

The merger of the A.F.L.-C.I.O. was in a rather fundamental sense founded on a negation of that principle. The essence of the no-raiding pact, the key instrument in bringing about unity two years ago, was the idea that no union could take members from another without its consent, no matter how eager the members themselves might be to secede.

In so far as this meant there would be no inter-union piracy, it was, of course, wholesome. But to the extent that it meant there was no way out for workers dissatisfied with the representation they were getting, it was a full turn from the old Wagner Act principle that workers were entitled to be represented by organizations of their selection.



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Free Choice

Meany, whose adherence to the free choice principle is both genuine and profound, has made it clear that he is no worshipper of per capita income or monumental membership totals. He took the lead in forcing out of the federation the biggest of all its affiliates, the International Brotherhood of Teamsters, on charges of racketeer control. He has made it equally emphatic that the ban on raiding does not prevent A.F.L.-C.I.O. unions from affording sanctuary to workers seeking to escape a sellout contract by exploiters still operating under federation charters. But this is only part of the answer. Some excellent agreements cover a rank and file membership in open rebellion against their union officials.

The greatest need of our union today is an imaginative crusade to reorganize the organized. With

llion-member unions, highly centralized leadership, union shop requirements, automatic dues checkoff, and long-term wage contracts, the remoteness of the worker from any sense of ownership of his organization is bound to be substantial. This is true even where the union administration tries energetically to build a sense of meaningful participation, a belief by the member that what he thinks and what he wants is important.

Unless unions can do a better job demonstrating that they possess the enthusiastic support of their members, it may become necessary to mandate that they undergo a periodic test of their right to retain exclusive bargaining rights through new certification elections under government auspices. Too many unions are doing their organizing these days solely by organizing employers.

If a re-emphasis on democracy means some temporary and limited surge in labor strife, it is a price we can afford to pay as an alternative to a drift into the cynical and sullen relations that characterize growing number of top-level relations today. Without any strikes, we are blacking out almost half of our potential steel production now through the voluntary closing down of furnaces for lack of demand at current prices. Most other basic industries are running at 15 to 25 per cent below capacity. If we can ease this flow of finished goods and raw material with scarcely an outcry, part of an economic "readjustment," a transitory rise in strikes will not cripple us, painful as it will prove to those immediately involved.

In the end a democratic understanding and support by workers for their unions and for the decisions their unions make is a much better foundation for responsibility and ability than an entrenched position built on collusive relations at the upper levels of union and management. The creation of sound internal democracy is a task no less urgent than the uprooting of corruption, the combatting of inflation or the restoration of full employment.

My own faith that the job can be done has been sustained by visits I made recently to two remarkable institutions of union service. One was the school run by Local 3 of the International Brotherhood of

Electrical Workers (on what used to be a millionaire's estate near Southampton, Long Island) to teach its members how to think. The other was the recreation center the New York Joint Board of the Amalgamated Clothing Workers maintains for its retired members atop the Sidney Hillman Health Center on Sixteenth Street. In both I found unionists in whom the ardor of the pioneer was wedded to an awareness that sobriety was a necessary hand maiden of power.

Theirs was a concept of unionism

that went beyond the cash register. Without that concept all the laws Congress may pass and all the ethical practices codes labor drafts for its own self-control will be of little avail. It is time for all of us — labor reporters, arbitrators, professors of industrial relations, personnel executives, technicians and union officials — to take stock of the cliches by which we have lived for 20 years and see how many of them need recasting to guard against the corrosion of moral values that attends too much of labor relations today.



"NOW, WHAT WAS THAT SUPPLIER'S NAME?"

"I just couldn't recall the name of that supplier — so I looked in the Yellow Pages and found him in a hurry!"

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Trends . . . in Finance and Business

• **Consumer Credit Picture** — Consumer instalment credit will increase approximately \$1.7 billion in 1958 according to Kenneth R. Wells, vice president of American National Bank and Trust Company of Chicago. This compares with an increase of \$2.1 billion in 1957 and \$2.87 billion in 1956. In Wells' opinion, the reason that the increase in instalment credit will be less than in previous years is the result of the state of mind of the general public and its effect on family spending in 1958. He points out that the average family's confidence in the current business outlook has been disturbed by many things, among them the stock market decline; reports of reduced working hours (even though the family itself is not affected); publicity regarding unemployment totals; and the general unfavorable forecasts for business.

• **A Boom for Credit Cards** — The 1958 income tax crackdown on expense accounts is triggering a boom in credit cards, according to the American Hotel Association. Applications for the Universal Travelcard, good for anything chargeable on a hotel bill in some 4,500 AHA member hotels, are running almost 40 per cent higher than last year at this time. Behind the development is the Internal Revenue Service's recent warning that personal income tax returns for 1958 must report cash reimbursements for business expenses. Cash paid out for business bills and then repaid by an employer must be listed as part of gross income on line 5 before being deducted immediately below on line 6A. Bills charged to a credit card and paid directly by the firm involve no reimbursement to the employee and need not be reported by him.

Charging of business expenses,

however, does not relieve the individual from proof that the expense was actually for the account of his employer. If a Treasury agent discovers a business expenditure and calls it personal, both the company and the individual may have to pay. The company cannot take the stricken portion as a business cost and thus must pay corporate taxes on the amount involved, and the individual has to pay taxes on it as personal income.

• **States Boost Taxes to New Highs** — State taxes continued upward in 1957, according to Commerce Clearing House in its annual review of state taxes. In one of the busiest legislative years on record, the legislatures of all the states except Kentucky and Virginia met in 59 regular and special sessions and made thousands of changes in state tax laws. While total state tax collections soared to \$14.4 billion in fiscal 1957, a noticeable lag in tax collections in the fiscal year beginning in July makes almost certain a continuation of the trend toward more and higher taxes in 1958.

The CCH review cites the legislature of Delaware which was called into a special session on December 3 to bolster a slowing tax take. The results were a new corporation income tax and higher personal income tax rates. Other special sessions may be called early in 1958 in Iowa, Missouri, and Nebraska. In addition, 40 study groups were ordered by 24 states to investigate and propose ways and means of meeting added governmental costs through new or higher taxes. The reports of many of these groups will be submitted to legislatures in 1958.

All kinds of taxes were affected during 1957, especially income, sales, gasoline, and cigarette taxes. A total

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rate increases were levied on the big sources of state revenue. Expiration dates of temporary parts of these four taxes that previously had been boosted on an emergency basis were extended in 13 instances. Such rates were made permanent in four states. Idaho, Iowa, Kansas, and Montana increased their income tax rates. Colorado, in effect, did the same by raising the percentage of tax reduction granted previously. Connecticut, Massachusetts, Minnesota, Pennsylvania, Rhode Island and Wisconsin extended the expiration dates of temporary income tax rates. Washington made permanent the one cent surtax imposed on its business and occupation tax. Sales use taxes rose in Arkansas, Maine and Rhode Island. Temporary rates were made permanent in Connecticut, Illinois, and Pennsylvania. An existing temporary rate was extended in North Dakota. Gasoline taxes were increased in Indiana, Nebraska, New Hampshire, Oklahoma, South Dakota, Utah and Montana. Current rates were extended in Connecticut, Iowa and Montana. Cigarette taxes were raised in Kansas, Michigan, Montana, Nebraska, Vermont, Wisconsin and Wyoming. An Illinois increase will be submitted to voters in a referendum in 1958. Massachusetts, Minnesota and Pennsylvania extended current cigarette tax rates. Connecticut, with a view to the federal taxpayer's deduction, declared cigarette tax a direct levy on the consumer. Property taxes also came or a change in many states. North Dakota secured a Korean tax with a new statewide levy. Idaho doubled its rate on intangibles. Voters in Illinois and Montana will be asked to approve higher rates for bond issues.

Here, There and Everywhere

(Continued from page 9)
ed to 3,325,000 in 1957 and the total of about 5,200,000 in 1948. Miscellaneous pneumatic tires, including aircraft and industrial, will be 2,400,000 in 1958, about the same as in 1957.

Gas Water Heaters — The number of automatic gas-fueled water heaters in use in American homes passed the 20 million mark in 1957. This figure has doubled since 1944, reports the Gas Appliance Manu-

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facturers Association, noting that there also has been a marked increase in the amount of hot water the average heater can deliver.

- **Hybrid: High Yield** — Hybrid corn, now planted on more than 95 per cent of the nation's corn acreage, produces an average yield of 49.6 bushels per acre. Only 20 years ago, according to Cargill, Inc., officials,

plantings were 32 per cent hybrid and the national yield was only 11.3 bushels.

- **Coffee Trend Is Up** — U. S. coffee consumption in 1960 will total 2,534 million pounds, 17 per cent more than the 2,166 million pounds used in 1955, according to a recent marketing study by American Can Company.

Making Tomorrow Today's Business

(Continued from page 14)

shall we proceed? Shall we talk only in specifics, or take a more general, thoughtful approach?

There are six principal directions in which these new tools and techniques will take us. The first of these I call the "assault on complexity."

Diversification, growth, the interrelationships of business and government—all of these add to complexity of operations, to the proliferation of data and reports and the massing of items for consideration in decision-making.

Theoretically we could combat these problems by putting hordes of people to work gathering and sorting the facts and data needed. But this is obviously economically impractical. Also whatever material was gathered this way would be outdated by the time management received it and so couldn't logically be acted upon. We overcome this

time lag by adopting the scientific methods embodied in Operations Research and by harnessing the capabilities of electronic data handling and digital computation.

The more proficient we become in handling and adapting these techniques, the less management will have to rely on its judgment—which can be extremely vulnerable. There's an old saw which says that "judgment is what you use when you don't have the facts."

The facts that are made available through the procedures we are discussing, and the relationships between them that are shown, answer many questions that at first seem to be a matter of judgment. Yet, until now, the overwhelming intricacies of such analysis defied solution by conventional mathematical approaches.

The second direction in which we

are moving I call the "attack drudgery!" This involves the relentless application of electronics and automatic equipment to routine office procedures, and it is in this direction that we have moved with most speed. Our progress in this area is an all-out attack on the mountains of paperwork, detail, and red tape. Our ultimate goal is to eliminate those stupefying, repetitive tasks insofar as people are concerned, and relegate this work to the world of the machine.

No one has yet been able to estimate the lift in efficiency and employee morale that comes from taking the monotony out of jobs being performed by capable, intelligent people, but I'll wager that it is tremendous.

Boring Routine

There is nothing more deadening to the spirit, to any interest an employee can have in his job, than dull, unimaginative, boring routine. Remove this, and it is entirely conceivable that you can inject a new element of excitement, a rejuvenation of interest into an employee's job. And it is not an exaggeration to believe that this metamorphosis can be reflected in an improvement in his or her performance—and the performance of the entire organization.

No machine is smarter than the man who runs it. It is only the trivial, repetitive, and time-consuming operations that will be turned over fully to these new "brain" supplementers.

We all need intelligent, imaginative people to supervise the activities of these man-made machines and see that they perform their appointed tasks. And this requires people to interpret their results for the benefit of social and industrial growth.

This leads to the next avenue—the practice of model making.

Since Operations Research is an analytical approach, it is symbolic and mathematical and makes full use of mathematical models as working devices. These models are actually sets of mathematical equations showing relationships of the system under study and how they change under varying circumstances.

For example, to build a model

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les pattern, the researchers give numerical weights to such factors as advertising budget, product design, competition, consumer patterns, price, quality and so on. Another model might be built upon manufacturing costs, inventories, employee production rate. By weaving and working these equations together, it is possible to add up everything that might influence a decision, then play it on the computer to see what the best answers will be under any given set of circumstances. Acceptance in working with this technique, as vague and abstract as it may seem now, will accelerate tremendously during the next few years, and that model-making or "formulation" will become an accepted form of management practice.

Decisive Answer

There was a time when every business problem had a "yes" or "no" answer. It was the answer the businessmen believed to be the right one, based on those facts available to him in his evaluation of them. Certain probabilities were weighed, others "hunched" or intuitively decided, and a decisive answer given. But today's problems have more tension to them; the "right" answer may just not be good enough. Is also the best possible answer? Has it been analyzed to reflect all contingencies to the nth degree? The application of scientific methods, when coupled with and supported by the digital computer, can provide a complete analysis of the results of several — rather than one — alternative courses of action. A heretofore unattainable, perhaps even unthought of, assortment of possibilities and alternatives arranged in order of desirability and probability of success, can be laid before a businessman struggling with problems heretofore too complex or simply too large for him to grasp.

The final decision is, of course, his to make. But by gathering, fitting, and applying logical interpretations to masses of data, scientific methodology can reduce to a minimum the amount of mental effort required to direct a large organization.

Still another of the important directions in which we are headed is "search for a common language."

Sometimes we call this integrated data processing; sometimes we simply call it improved communications.

But, by whatever name it is known, this much is certain: we must speed up our development, translation and integration of the information covered and generated by these high-powered tools so that it is more easily understood, and thus more easily assimilated by business and industry. On the one hand, we must recognize that while mathematical symbology helps in the solution of a problem, or problems, it does not help in communicating results to management and getting them acted upon.

The president of the Carnegie Institution, Dr. Caryl P. Haskins, put his finger on this aspect of the problem of communication when he said, "... scientists, not always the most articulate of men, have often been out of touch with the rest of us. So absorbed have they been in their projects, so technical in their language in which they work, that a gap has inevitably developed between

the laboratory and the world which it has at once enriched and imperiled."

To close this gap, we must try to develop a sympathy and tolerance for the language of mathematics, and the scientists, in turn, must realize that the straightforward Anglo Saxon English is not obsolete. At the level of application, we will have to develop a common technical vocabulary so that information, as it is received by business, will be immediately translated into a language understood by each department — whether it be finance, sales, production, or management itself.

We must also find a practical means for coordinating knowledge without extensive waste. Particularly is this true in the field of scientific knowledge. Less than a century ago, for example, it was possible for a scientist to read all of the articles published in his field. Today it is reliably estimated that some 30,000 scientific articles are published every week. Such is the colossus of present day science.

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management, for the development of a system that would be a "master file" of items and data of scientific and engineering value. Such a system would "search" its memory for specific items or for general information on a given subject. It would scan a new document and abstract the pertinent subjects covered. It would relate these subjects to existing information and eliminate duplication. It would translate from any language into English. And it would condense this information so that it would be readily available to those in the fields concerned . . . and it would do all of these things auto-

matically and without error or hesitation.

The fifth direction is the "thrust toward real time." In every management problem, in every decision, in every action, there is the major factor of time. It is inherent in management because we are concerned with decisions for action — and action is always aimed at results in the future.

What is meant by real time? If your firm is like most others, on the twentieth of the month you received your profit and loss data and other pertinent statistics from the accounting department. They are based on

returns as of the last day of last month. On your analysis of these figures, you are to project your firm's business and make decisions, not for today but for tomorrow — but, do you stop to realize that you are doing this on facts and statistics that are at least 20 days old when you receive them?

In the type of dynamic economy in which we are all operating, where a single wrong move can instantaneously cost millions, how long do you think we can continue making the right decisions for the future when we are dealing with obsolete, incomplete — and by the time we receive them — virtually irrelevant facts.

The timeliness of the data you work with governs the degree of effectiveness with which you can deal with the future. So, I foresee our moving closer and closer toward real time accounting when management will make decisions based on all of the facts as they exist at the moment of decision.

Our record-keeping processes, stimulated and modified to reflect the scientific approaches, will maintain records in real time — changes in the records will occur simultaneously with the physical transactions themselves.

Credit Account

I can also see the elimination of payroll checks as we know them. Instead, doesn't it seem more practical and a sensible way to eliminate paperwork, to electronically credit an employee's salary direct to his account at a nearby bank?

In my opinion we are just beginning to feel the first stirrings of the movement toward operations in real time. Already we have at hand the beginnings of process control in real time. I see on the horizon the possibility of fiscal measurement in real time. I see the possibility of operations, from the point of receipt of the order, through production scheduling, engineering control, machine loading and delivery — being controlled in real time. Above all, I see the prospect of management decisions related in real time to operating result.

Here again, the computer is

(Continued on page 31)

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Industrial Developments

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VESTMENTS in industrial plant facilities in January totalled \$6,100, compared with \$24,020,000 in January 1957. Projects covered by the total include construction of new plants, expansion of existing manufacturing and warehouse facilities, and the acquisition of land or buildings for industrial purposes.

Elgin National Watch Company will build a new plant in Palatine to continue the operation of its Micronics Division. This division specializes in design, development, and custom production of high precision devices for guided missiles, aircraft control systems and timing instruments. The division is moving back to the Chicago area from a plant which the company is closing in Lincoln, Neb. Other operations at Lincoln of the Watch Division are being consolidated at Elgin. The new building will contain 80,000 square feet of office area. The new plant will create about 300 new jobs at Palatine, and about 200 to 300 additional jobs will be created at Elgin. Dunlap and Bar, Inc., architect and engineer; Stedman Company, general contractor.

Underwriters Laboratories, Inc., is underway a 42,000 square foot building at its Northbrook Laboratory site at Pfingston road north of Dundee road. The new building will be devoted to the operation of Fire Protection department of Underwriters Laboratories. The firm will move its entire laboratory facilities to the Northbrook site as additional floor area is erected to accommodate the other operations of this organization. The Austin Company is in charge of construction.

Seren Machine Products, at 1810 Fulton street, manufacturer of fixtures, valves, assemblies and

performing job machine shop operations, will start construction soon on a 40,000 square foot plant in Schiller Park at 9450 W. Ainslie. Rosen and Horowitz, architect and engineer. The new facility may be operated as a branch of the present plant.

- **Sola Electric Company**, 4627 W. 16th street, Cicero, has acquired 12 acres of land in the Centex Industrial District in Elk Grove as a future plant site. The property is located on the east side of Route 83, north of the Franklin MacVeagh Company building. Sola manufactures electrical transformers.

- **Sears, Roebuck and Company** has acquired a 30 acre tract of land in Melrose Park bounded by George street, Armitage and Bloomingdale avenues and the Soo Line Railroad in the Melrose Park Industrial District developed by Farr, Chinnock and Sampson, realtors. The company expects to erect a warehouse facility of large dimensions on the Melrose Park site at a future date.

- **Humiston-Keeling and Company** is erecting a 34,000 square foot warehouse and office building containing a 100 foot loading dock and provisions for future expansion, at 7201 W. 9th street, Gary. The new facility will be operated as a branch of the 3900 S. Michigan avenue location. The company is a distributor of drug products, and construction of the new warehouse is scheduled to start in February. Walter H. Sobel, architect; J. Stewart Stein, engineer.

- **Bliss & Laughlin, Inc.**, Harvey, cold rolled steel bar producer, operating plants in Harvey, Buffalo, Detroit and Mansfield, Mass., has acquired a 27 acre site in South Holland adjacent to 156th street.



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The new site is about one mile from the Harvey plant, and is being held for future plant development.

• **G. D. Searle and Company** in Skokie is establishing a branch operation at Wheeling and Dundee roads in Wheeling. This well known pharmaceutical manufacturer will erect an 18,000 square foot building on a site purchased in 1956. The building will be a two-story structure. Herbert G. Banse, architect; George A. Fuller Company, general contractor.

• **P. R. Mallory and Company**, Inc., 3670 N. Milwaukee avenue, is erecting a 38,000 square foot warehouse adjacent to its plant for the use of its Mallory Plastics Company division. M. L. Wolfson, architect and engineer; General Building and Maintenance Company, general contractor.

• **Hautau & Otto**, 4939 W. Lake street, is erecting an 11,000 square foot warehouse adjacent to its plant which specializes in printing of record keeping systems. Albert Smithson, Jr., architect.

• **Elgin Milk Products Company**, 3659 W. Harrison street, has acquired a one-story building with 16,000 square feet of floor area at 3707 W. Harrison across the street from its present location. The company is a processor of milk for use in ice cream mix. J. J. Harrington and Company, brokers.

• **Munster Steel Company**, a newly formed steel fabricating plant, is erecting a 10,000 square foot building in Munster, Ind., scheduled for completion in the spring. A 10-acre site on which the plant is being

erected will provide space for early expansion of this unit. Thom H. Gaddis, general contractor.

• **Rand McNally and Company** with plants in Skokie and Hammond, well-known map maker and printer, is having a 17,000 square foot warehouse building constructed in Hammond on Detroit street, to serve its Hammond plant. Pett Becker, builder.

• **Robert S. Abbott Publishing Company, Inc.**, 3435 Indiana avenue, publisher of the Chicago Defender, has acquired the building at 1729 South Michigan avenue for future use as its publishing headquarters.

• **Sterline Shower Corporation**, 521 W. Monroe street, has acquired a one-story building at 2059 W. Racine street, containing 17,000 square feet of floor area. The company makes brass plumbing equipment and shower curtains. Lang, Weise and Cella Company and J. J. Harrington and Company, brokers.

• **W. M. Welch Manufacturing Company**, 1515 N. Sedgwick, manufacturer of laboratory equipment and school supplies, has acquired 18.5 acres in Edens Industrial Park for the eventual building of a large new plant. Plans for the structure are not complete and it is indefinite when the company will utilize the property.

• **Joyce Seven-Up Bottling Company** is erecting a warehouse building of about 12,000 square feet of floor area in Waukegan, which the company may convert into a complete bottling plant at a later date. Kruegel, Wilkins, Healy and Moore architect.

• **Clark Equipment Company**, Buchanan, Mich., operating a newly constructed plant at 73rd and Cicero avenue, Bedford Park, is moving its Chicago area administration from 625 N. Kedzie avenue to a newly acquired building at 3400 N. Western avenue. The building contains 30,000 square feet of floor area. Browne and Storch, Inc. and Benne and Kahnweiler, brokers.

• **Richardson Company**, Melrose Park, is adding a pilot plant for research purposes to its factory. The company makes plastic materials and



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stic products. Rodde Anderson and Novak, architect; Freevol Smeding Company, general contractor.

Alliance Tool and Manufacturing Company, 1146 Randolph street, erecting a 7,000 square foot building in Maywood to which the firm will move its entire operations in the field of cutting tools. The new building is now underway and scheduled for completion next summer. Harold A. Stahl, architect; John Mueller and Sons, general contractor.

Silver & Sable, Inc., has acquired the 6,000 square foot building at 2420 W. Cermak road for the production of the firm's line of mica surfaced fixtures. The firm presently located at 224 N. Carpenter and will move its operation to the new building. Victor Weil Company and J. J. Harrington and Company, brokers.

Kruse Manufacturing Company, 3449 W. 51st street, will start construction soon on a factory building containing 6,000 square feet of office area built by Rader Company, architect and general contractor. The building is scheduled for completion in the summer. The firm engages in job punch press operations. The new structure will be located at 53rd and Hamlin street.

Utility Typesetting Company, Inc., 1306 Evergreen avenue, is starting construction on a 5,000 square foot office and factory building at 11 W. Belmont avenue. William Crosby, architect; Ockerlund Construction Company, general contractor.

Today's Business

(Continued from page 28)

electronic means to the end—the tool by which such a result can be accomplished. And because the susceptibility of business routine and business problems to electronic simplification will increase rather than diminish as we become more proficient in the use of these tools, I predict that the multiple-computer firms will be the rule rather than the exception.

One type of computer will be ex-

pressly used for controlling physical activity and processes. This might be the operation of valves in a pipeline. Another family of computers will be the "heart" of a company-wide information and control system. Such computers will relate the planning and forecasting phases of the business to the operating phases. A system linking these two computer networks would be responsive in terms of real-time, yet at the same time it would be simple and flexible in terms of management decision and control.

Which brings me to the last direction to which we seem inevitably headed, the "assault on tradition."

We would be naive to assume that our traditional organizational structures, our time-encrusted staff and line relationships, our historic concepts of physical and architectural layout, will not be affected by this evolution. They most certainly will, and in a very profound way.

For example, for the point of view of the hierarchy in a business, it's obvious that we will see the rise of a new echelon of business citizenry—the methods people and the pro-

grammers. The former will be responsible for deciding what problems are susceptible to scientific analysis. The latter will take charge of the important job of translating such problems into language the machine can understand, and back again to terms meaningful to businessmen.

Supervisors and foremen will function as members of management in the truest and fullest sense as more and more corporate decisions are settled at their levels. This will be made feasible because management will have the ability and the "tools" to make accurate and complete data available to them for immediate action.

The improvements in skill and accuracy of long-range forecasts will reduce the need for stockpiling of goods. In turn this will markedly alter the architecture of tomorrow's plants, eliminating the need for extensive warehouse space. It is no longer a question of whether or not scientific principles can be applied to the management process, but rather, it is a question of when, to what extent and how rapidly.

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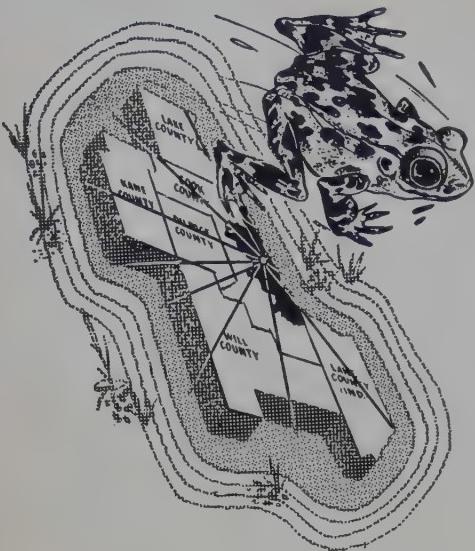
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And the Chicagoland industrial area is truly the "biggest puddle." Since Pearl Harbor Day, 1050 new plants have been established here. This is the highest rate of industrial development in the country during that period.

Also, in the same period of time, Chicago's wholesale trade has shown an equally phenomenal growth — from \$4.2 billion to \$21.5 billion.

The general movement of industry into the Middle West combined with the Chicago area's new importance as a world port will generate an estimated 890,000 new jobs and a population increase of nearly two million by 1975. This will result in an increase in retail trade from \$4.2 billion to \$12.7 billion while the number of stores is expected to increase from the present 58,000 to 75,000.

Many companies are presently gearing their future sales programs to take advantage of these sure developments. If you, too, are looking to the future, you will want to direct more of your advertising and sales promotional effort to Chicago's industrial executives. Regular COMMERCE representation will do it — and it's economical too.



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transportation and Traffic

THE railroads on December 23 filed with the Interstate Commerce Commission a tariff making corrective increases in freight rates and charges effective February 1, 1958. The matter has been assigned to the commission as Ex Parte No.

Increased Freight Rates, 1958. The tariff contains a refund provision which states that if the increases resulting therefrom exceed the increases subsequently approved or prescribed by the commission, the carriers will refund the difference. Final argument in the proceeding was held January 29, 1958, in the Washington, D. C., offices of the commission.

I. C. C. Submits 71st Annual Report to Congress: The Interstate Commerce Commission, on January 23, submitted its 71st annual report to Congress. The 150-page report, including appendixes, contains four legislative recommendations in addition to the 16 proposals made in previous years. The new recommendations suggest amendments to

the Federal Trade Commission Act, Elkins Act, Safety Appliance Acts, and Section 5(10) of the Interstate Commerce Act. The commission suggests that the Elkins Act be amended "so as to make it clear that when a concession given or discrimination practiced is an inducement to obtain the interstate traffic of a shipper, every shipment subsequently transported in interstate or foreign commerce for such shipper by the common carrier directly or indirectly responsible for the concession or discrimination shall be deemed to have been transported at a rate less than the tariff rate published and filed by such carrier, and that every shipment so transported shall be deemed to constitute a separate service." The commission also asks that the Elkins Act be amended "so

as to make the treble-damage forfeiture provisions applicable to carriers in the same manner and to the same extent that such provisions are now applicable to shippers and receivers."

- **Agreement Reached on Truck-Drivers Wage Contract:** A wage agreement has been reached between midwestern motor carriers and the International Brotherhood of Teamsters. The agreement calls for an increase in mileage wage rates of $\frac{1}{4}$ cent a mile for each of the next three years, beginning February 1, 1958. The hourly pay rate will be increased 10 cents for the year beginning February 1, 1958, and seven cents for each of the two succeeding years. The new pact also provides for increases in the pension and health and welfare funds.

- **Six States Ask Supreme Court to Force Chicago to Return Lake Water:** Six states have filed a petition with the United States Supreme Court to require that Chicago return to Lake Michigan the water pumped from it for domestic and industrial use. The suit charges that the diversion of water threatens to lower lake levels in detriment to shipping and to hydroelectric projects in the St. Lawrence and Niagara Rivers. In commenting on the action, Mayor Daley pointed out that surveys by engineers show that no reduction of consequence in the lake level results from the diversion and added that in recent years millions of dollars of damage has resulted from high water on the Great Lakes. Having sufficient water in the Illinois waterway, Mayor Daley continued, not only benefits Chicago but the entire nation. The six states that filed the petition are Wisconsin, Minnesota, Ohio, Pennsylvania, Michigan and New York. The Su-



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Quincy Railroad**

preme Court has allowed 45 days to answer the suit.

• Clarke Resigns From I.C.C.— Abe Goff Named Successor: The White House has announced the resignation of Owen Clarke as a member of the Interstate Commerce Commission. Mr. Clarke was appointed to the commission in July, 1953, by President Eisenhower and was its chairman during the year 1957. Abe McGregor Goff, general counsel of the Post Office Department, has been named by President Eisenhower to fill the remainder of Mr. Clarke's term which expires December 31, 1959. The nomination will require confirmation by the Senate. Mr. Goff, who was appointed to his Post Office post in February, 1954, is a lawyer and former Republican congressman from Idaho. Mr. Clarke has been named vice president at large of the Chesapeake and Ohio Railroad.

• C. & N. W. Railway Takes Control of L. & M. Railway: With completion of stock control and merger transactions on January 2, the Chi-

cago and North Western Railway Company became the newest railroad to serve St. Louis and connect directly with railroads operating out of the St. Louis gateway to the south and southwest. Acting on approval of the Interstate Commerce Commission, the North Western took over full control of the Litchfield and Madison Railway Company, exchanging \$8 million for the Litchfield's 180,000 shares of common stock outstanding. Immediately following the purchase transaction, the North Western, as the Litchfield's sole stockholder, merged the line into the North Western and dissolved the L. & M. as a corporate entity.

• I.C.C. Grants Southern and Western Railroads Mail Pay Increase: The Interstate Commerce Commission has granted the western and southern railroads an increase of \$12.3 million annually in compensation for transporting the U. S. mails. The commission found that the mail payments "have not been fair and reasonable for the services performed" since July 1, 1957. The

rate advance will give the line about a seven per cent overall increase.

• Railroad Carloadings in 1957 Dropped 6.2 per cent under 1956. Railroad revenue carloadings for the year 1957 were 6.2 per cent under 1956, according to the Association of American Railroads. Carloadings for the week ending January 11, 1958, were 16.4 per cent and 19.8 per cent, respectively, below the same weeks in 1957 and 1956. Total loadings for the year 1957 amounted to 35,500,167 cars as compared with 37,844,828 in 1956.

• President's Budget Includes \$6 Million for Cal-Sag Project: President Eisenhower's budget proposal include an additional \$6 million appropriation for the widening of the Calumet-Sag Channel. A similar appropriation was approved by Congress last August to finance the third step in the channel widening program.

Air Conditioning

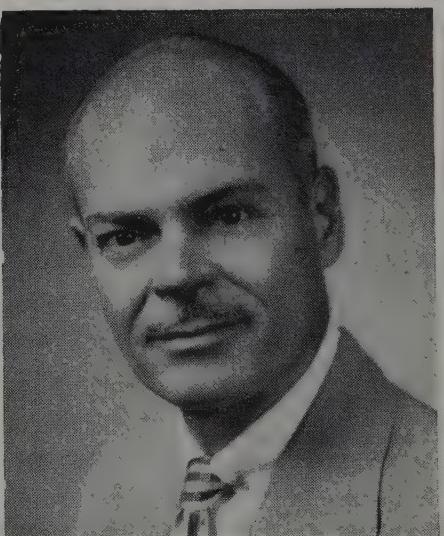
(Continued from page 19)

adds, "this picture will change rapidly in the next few years. By 1976 practically all American industrial plants will be fully air conditioned."

Recently, the Trane Company another major manufacturer of central plant air conditioning equipment, asked leading industrial engineers and architects throughout the country what they thought about the future of factory air conditioning. The Chicago branch of the fraternity estimated that three per cent of all plant space in this area would be air conditioned by 1960, 15 per cent by 1970, and 35 per cent by 1980. Similar increases were forecast in several other northern cities included in the survey.

Besides GE and Trane, other major manufacturers of central plant air conditioning equipment are Carrier Corporation, Chrysler Air Temp, Worthington, York, and Westinghouse. One of the earliest industrial installations in the Chicago area was Carrier's 200-ton system at the Elgin National Watch Company, which went into service in 1937. Today, Elgin has more than 1,000 tons of refrigerating capacity cooling 150,000 square feet of office and production space in it.

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quarters plant; this is about half building's total floor area. Departments occupying this space include product assembly and testing, manufacturing, accounting, tabulating offices.

Union officials estimate that damage to delicate watch parts (one of screws the firm uses is so small

25,000 are needed to fill a table) has been reduced approximately 25 per cent since the installation of air conditioning. This is due to reduction of dust and humidity

in production departments. Worker absenteeism, output, and morale also have been improved, but company isn't sure how much. Overall benefits must be substantial, however, for the firm is now in the throes of air conditioning the rest of its main plant, at a cost of more than half a million dollars.

Although air conditioning has been used to protect delicate manufacturing operations for some time, the idea has been gaining additional converts recently. In the Trane factory, for example, it was reported today approximately 20 per cent of the floor space devoted to textile manufacturing is air conditioned; in comparison, only about one percent had air conditioning at the end of World War II. Meanwhile, in electronics, pharmaceuticals, optics, metalworking, printing, and cosmetics industries, air conditioning is just getting a foothold.

Valuable Benefits

Whenever close control over humidity, temperature, and dust is required to turn out a quality product, air conditioning provides valuable benefits. In lithography, for example, excessive humidity curls paper and prevents the ink from drying properly. Dust particles and man perspiration can damage highly-polished metal surfaces, while temperature changes of a relatively few degrees can cause trouble when all parts have to be machined to specially-precise dimensions. In

the pharmaceuticals industry, the ability of air conditioning to control humidity produces better coatings on pills. Humidity and/or temperature are also important in baking, wood, leather, electronic, and tobacco industries.

But it isn't only the product that benefits. Just about every firm that

has installed air conditioning reports an improvement in employee efficiency as well. A recent study by Architectural Forum Magazine among 75 manufacturing plants in the New York area, for example, found that after installation of air conditioning equipment, absenteeism dropped 25 to 30 per cent during the summer months. Personnel turnover was cut, housekeeping costs were lower, and production went up.

Low Turnover

Powers Regulator Company is one of a number of Chicago-area firms which has had similar experiences. At Powers' Skokie plant, built in 1951, all the offices are air conditioned. Reports Employee Relations Director Richard Steckel: "I'm convinced air conditioning has contributed materially to our low turnover and absenteeism rates. We have an easier time hiring, too, especially when the office labor supply is so tight. Many applicants say they come to us first because our ads mention air conditioning."

Powers used to be located in a venerable building in Chicago. Says

one veteran employee: "During the summer, we had to quit early whenever the temperature rose to 95 or higher. On the other warm days, although we remained on the job, we didn't set any records for work efficiency. Here, it's a completely different story; we're comfortable throughout the year. I'd say that air conditioning is at least as valuable during moderately warm weather — when the heat drags you down but doesn't knock you out — as it is during the scorchers."

Another veteran Powers employee, a woman, adds that: "At the old building, if I came to work in a white blouse it would be filthy by the end of the day because of the dirt and dust blown in through the open window. Now, all that grime is kept out. My desk stays much cleaner too, which makes for pleasanter working conditions."

Few studies are available showing the dollars-and-cents value of these rather intangible benefits of air conditioning. However, the current going rate for air conditioned office space in the Loop is about 20 per cent higher than that for non air-conditioned space, according to the

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National Association of Building Owners and Managers, and there are almost no vacancies. Together with the steadily-growing percentage of air-conditioned office space, this eagerness on the part of tenants to pay premium rentals indicates that the benefits, although hard to pin down statistically, are still concrete and substantial.

For building and plant owners, air conditioning tends to cut cleaning costs. Roger Heinen, manager of maintenance at the Prudential Building, says the reduction in dirt accumulation is "significant." He supervises one of the more intricate installations built to date. Temperatures throughout the 41-story building are controlled from a central panel board studded with devices that tell the temperature on every floor. The building engineer can raise or lower the temperature on any floor in the building merely by operating electronic-pneumatic controls on this panel board. Cooling is provided by three Carrier centrifugal compressors, each rated at 900 tons.

The 1956 "Office Building Experience Exchange Report," a survey of

operating costs conducted annually by the National Association of Building Owners and Managers, reported that cleaning costs for Chicago office buildings (air-conditioned and non air-conditioned) averaged 70.7 cents per square foot of rentable space, while decorating costs came to 11.5 cents. By comparison, a special NABOM survey of air conditioned buildings alone (many of them in Chicago) showed that their cleaning costs averaged 58.5 cents, while decorating costs were about 6 cents, per square foot of rentable area. (According to industry spokesmen, electronic air cleaners in air conditioning systems will eliminate more than 90 per cent of all staining particles from the air.)

Whether the undeniable virtues of air conditioning—in terms of improved product, greater output, and reduced overhead costs—are sufficient to justify its price tag is a moot point. One answer comes from the Rotor Tool Company, Cleveland, a manufacturer of power tools.

Approximately four years ago, Rotor spent some \$70,000 to install air conditioning throughout its 55,000 square foot plant. Total cap-

ital and operating costs since then have averaged 3.4 cents per employee hour during the five summer months when the system is in operation. This charge represents less than one per cent of the company's total labor and overhead costs for the same period. The investment has produced a "permanent" increase of three to five per cent in production efficiency, says Rotor president, H. P. Bailey, who adds: "Our experiences with air conditioning during the last four years brings us to the definite conclusion that air conditioning your factory does pay."

Actually, the benefits provided by air conditioning probably don't have to be very great, percentagewise, for the investment to pay for itself. An extremely-detailed study by Minneapolis-Honeywell, which supplies controls for many of the air-conditioning units in operation today, shows that total annual owning and operating costs for a typical system are approximately 46 cents per square foot in new industrial buildings, 55 cents in existing industrial buildings, 56 cents in new office buildings, and 68 cents in existing office buildings. An increase of 1 per cent, at most, in working efficiency, is sufficient to pay back these costs, the study contends.

Chicago isn't the hottest spot in the nation. On the other hand, there are more than a few days during the summer when the city is turned into an oven or a turkish bath. A lot of companies believe, apparently, that air conditioning can pay for itself under such conditions. Few of those who have to sweat out the heat and humidity in non air-conditioned plants and offices will disagree.

Look at Next 25 Years

(Continued from page 15)

physical volume and an approximately 50 per cent increase in price levels above those of today.

There will be a construction industry operating in the United States at an annual scale of around \$150 billion each year, including money spent for modernization, maintenance and repairs. That's two-and-a-half times as great as today's construction industry in terms of dollars, representing an immense increase over today's physical vol-

plus a rise in price level of 60 per cent. We will be producing 2,000,000 homes each year and consider normal. During many of the years centering around 1983 we will build more. There seems no doubt that production will reach 10,000 homes in some years, rising to close to 3,000,000 homes in most active years of the 1980's. The immense redistribution of the American population will have taken place and will still be underway at that time. The great cities within old limits will have long since ceased to grow. Many will have sunk notably.

Vast Built-up Area

Beyond their present political boundaries, in suburbia, transurbia, what is still open country, people will have spread out in a vast area, inundating the rural areas until the difference between city and country will have been almost wiped out. From Portland, Maine, to New York City, Virginia, there will be vast built-up area with an endless succession of factories and houses, and all that goes with them. Likewise, one vast built-up area north of Milwaukee, Wisconsin; around Chicago; and far beyond Detroit; Cleveland and Pittsburgh, Pennsylvania; will have come into existence.

Along the Gulf Coast, there will be another immensely populated area from west of Houston to east of New Orleans. The Los Angeles built-up area will have inundated Santa Barbara and reached Point Conception where California sticks into the Pacific Ocean. Towards the south it will have reached San Diego and the Imperial Valley, and spread out for mile after endless miles into the desert. Up north in California, the San Francisco Bay built-up area will have spread out in all directions from the Bay, and merged with expanding Sacramento and Stockton in one vast supercity, in the whole Central Valley of California as its hinterland.

By around 1983, for the first time in man's long history, he will have more time for leisure than he will be required to work to make a living. Rapidly developing technology will assure this by making it possible for each individual to produce

more, in less time, under easier working conditions. At the same time, American families will have more money, more comfortable living, and higher standards than ever before.

By this time, the great bulk of the American population which will have reached about 250,000,000 — a quarter of a billion people — will be living in vast built-up areas in which many familiar, old cities as we know them today will be completely submerged. These great centers of population will be something new in the world's history. Too vast to be called supercities or even supermetropolitan areas, their very existence will have risen to traffic, social and governmental problems that will challenge the best intellectual leadership of 1983. Among these problems will be the need for open spaces and ready access to recreation areas for a swarming population with unprecedented leisure time on its hands and money to spend.

Transportation will, of course, be the key to everything, the very basis of existence of these immensely swollen human communities. Rapid transit and communication inside these swarming but vast areas, and easy access to and away from them,

will be literally matters of life and death, economically and socially, and will represent the great civic problem of the times.

It is inevitable that all sorts of ideas will be tried out. There will be twice as many automobiles on the highways as today. Great fleets of helicopters will be in operation. The "downtown" sections, and other areas of intense concentration of population and business will probably allow no private cars. These will be parked on the outskirts in huge underground garages and public transportation will take over from there.

Public transportation will stage a spectacular comeback. But not the kind we know today. Railway, monorail, rubber and air transport will be integrated into one public system of rapid transit to shuttle the immense tides of humanity back and forth, probably partly subsidized by taxes on the entire built-up community.

The automobile revolution, which has changed the world's way of life more than anything that has ever happened to man, will still be working itself out. It will not be finished by 1983. On the contrary, it will still dominate the lives, leisure, work-time, and very existence of our

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people. The problems that have come in its wake will still not be fully solved.

The great national highway program of our day will have long since been completed, but will have proved to be only a first step in solving the basic problem of rebuilding the nation so the automobile can be used to its fullest advantage. Immense increase in air transportation will help but the car, bus and truck, riding asphalt and concrete on rubber tires, will still be the mainstay of transportation. By 1983, highway and parking area construction, and the building of bridges and tunnels to break bottlenecks, will have reached proportions far beyond anything in our day.

Great Crescent

The transportation system of that day will be dominated by the fact that the bulk of American population will have gravitated largely toward a Great Crescent on the United States map. It will stretch from around the Great Lakes, through the eastern seaboard from Portland, Maine, to Newport News, Virginia, along the south Atlantic Coast area from about Charleston, S.C., into all Florida and along the entire Gulf Coast to Mexico. Then, across the Southwest into California and up to Oregon and Washington. Long before that time, California will have become the most populated state in the Union.

Industrialization of the South and West will have reached gigantic proportions. Economically, these two vast regions of our country will represent fully one half of the United States. The gap in income and standard of living between the North and South will have practically disappeared.

One of the problems foremost in the minds of the generations around 1983 will be how best to provide efficient government for these immense concentrations of teeming human beings — these many-hundred-mile-long built-up areas enclosing tens of thousands of factories, tens of millions of homes and myriads of subsidiary enterprises. The traditional governmental organizations of boroughs, cities, counties, and even states, as we know them now, will have proved to be hopelessly antiquated by 1983. Even political metropolitan areas, such as are now being

experimented with by Toronto and Miami, will not be the final solution.

Probably, ultimately, an entirely new type of governmental organization, elected by all the people in these many-hundred-mile-long built-up areas, will evolve, taxing and spending for the benefit of all the regional population. This is probably the second biggest problem, after transportation, that the generation of 1983 must solve. It might well be, of course, that the governmental organization problem will have to be solved before adequate transportation can be provided.

We will no more than have solved some of the new problems, however, as the Great Crescent completes its absorption of the bulk of the nation's population and industry, when vast new forces will loom on the horizon, the outlines of which can already be seen.

It is one of the peculiarities of the United States, and its outstanding hydrographic fact, that the country can be divided almost in two equal halves by the 98th meridian of longitude. To the east of it, the United States has ample rainfall. To the west of it, the rainfall is deficient except for the Pacific slope of Washington, Oregon, Northern California and the high mountains. Once sea water can be cheaply desalinated and nuclear power has become a practical reality, fresh water can be pumped for hundreds, even thousands of miles into the empty arid regions and immense new areas farmed, populated and industrialized.

Water Through Conduits

Fresh water will be piped by the generations around 1983 and beyond as oil is today, but through far larger conduits. Man-made rivers, open-cement-lined canals over the plains and tunneled through mountains will rival and, in many cases, surpass the great streams of nature. When this comes to pass, population will begin to pour out of the Great Crescent into the watered and tamed deserts and near deserts.

These are some of the things that lie ahead for the generations around 1983. By then atomic energy will furnish at least one third of our power, perhaps much more. Today atomic fission energy will seem primitive. Fusion energy, the type used in the hydrogen bomb, will have

The tamed and man will have to the basic inherent physical of the universe. The great technological revolution based on the ceaseless advance and research, will sweep before them. Man will explore space. Atomic energy will free nations from dependence on gas and coal. Universal indoor temperature-control, air conditioning, will enable man to live comfortably where.

1983 the electronic revolution will have transformed the world and go much further thereafter. Manual drudgery will have disappeared before the computing and processing machine, as automation machinery relegates physical slavery to the dim past.

Multitudes of New Jobs

In today, the machine through electronic devices, can exercise initiative, remember, and make decisions. By 1983, this will have progressed so far that myriads of old will have ceased to exist but will be multitudes of new ones people who can design, build, supervise, repair, and service electronic equipment that controls man's myriad machines. New products will be pouring from laboratory and factory in an endless flood. Man will have ceased to be dependent largely on natural materials; that is, on the way nature juggled the molecules of matter. He will juggle them himself into anything he wants. Plastics will have gone into everything, including all of construction.

There will be a tremendous concentration on rehousing as well as housing, and the home-building industry will come into its greatest period. Today, the vast majority of American people, though riding in automobiles of the latest vintage, live in dwellings of decades and even centuries ago.

Almost everything else we have modernized and the standard of living is geared to the latest models. In housing, the great majority live in dwellings that are as late as the Model T Ford of the '50s. And year by year, the very notion of the old dwellings becomes increasingly obsolete as the population disperses to the suburbs, the suburbs, the Great Crescent, the West and the South.

The demolition rate of old housing, already on a scale of 200,000 to 250,000 each year, will reach fantastic dimensions in the 1980's. By the end of that decade a dwelling structure built before 1945 will be a tourist's curiosity. To such immense demands and changes, the home-building industry will have to gear itself.

Two homes for each family, one of necessity, fairly close to the place of work, and the other where the family really wants to live, will become part of the American standard of living. The latter, because of the predominance of leisure time over work time, may be considered the more important. Homes specially built for the aged will be erected for millions of oldsters, living ever longer as the medical revolution solves one old-age health problem after another, while they become an ever-increasing proportion of the population.

Side by side with the complete reconstruction and relocation of the housing plant, accompanying and following it as always, there will be non-residential construction activity beyond anything we have seen in the building boom of the 1950's. As always in the history of construction, residential building will be the prime generator that sets all the other wheels of the construction industry in motion.

Higher Incomes

The economic system of the United States will change, evolve and adapt itself. Inflation seems inevitable. Prices in 1983 will be about 50 per cent higher than today, even higher if highly competent management of money does not prevail. Family incomes will be much higher. Only a minority, perhaps no more than ten per cent, will have incomes of less than \$5,000 a year.

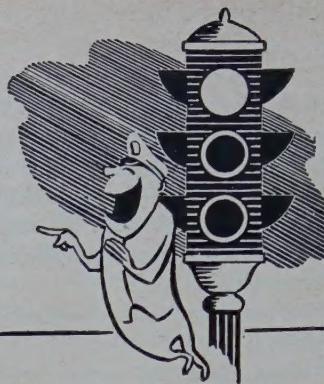
Basic economic laws will remain as operative in 1983 as in 1958, and as operative as the law of gravity. The colossal demand for funds for investment and expansion, and for financing an ever-increasing living standard for a population 80,000,000 greater than today — to say nothing of defense — will press inexorably against the supply of funds produced by saving. The result will be precisely as in our time, that the smouldering fires of inflation will be ever present under our successors' feet.

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Stop me...If...



Instructor to late student—"You should have been here at eight o'clock."

Late Student—"Why? What happened?"

Two schoolgirls were discussing their families.

"Why does your grandmother read the Bible so much?" asked one.

"I think," said the other, "that she is cramming for her finals."

Wife—"I was a fool when I married you."

Hubby—"Yes, but I was so infatuated with you that I didn't even notice it."

Officer—"Why did you keep on going after I whistled?"

Lady driver—"Sorry, officer, I'm pretty deaf."

Officer—"Well, don't worry, lady, you'll get your hearing in the morning."

An irate mother was complaining to her doctor that his bill was too high.

"Don't forget," he reminded her, "that I paid five visits to Tommy when he had the Asian flu."

"Don't you forget," she replied, "that Tommy made you wealthy by giving it to the whole school."

"Well, Tom," said the little boy's mother as he walked into the kitchen, "were you a good boy at school today?"

"Sure," answered the lad. "How much trouble can you get into standing in a corner all day?"

King Arthur: "I hear you have been misbehaving."

Knight: "In what manor, sire?"

Women not only drive as well as men, they can do it on either side of the road.

The boss was feared by his staff for the caustic memos he wrote. One day one of his assistants discovered to his horror that he'd given the executive a set of wrong figures. Fearfully he wrote to the boss.

"In answer to your memo of tomorrow . . ."

After listening to an admiring boy friend trying to impress her by reciting a list of his distinguished ancestors, the pretty young coed retorted:

"Well, personally, I descended from a long line my mother once listened to."

Here are some things that never look big as you expected:

The "two acres of woodland" surround a picturesque cabin.

Your first dividend check on a "prizing" stock.

"Generous sample" you're sent free request.

An art reproduction "suitable for framing."

The half-gallon of ice cream you bring home for a children's party.

Your raise after it has formed a merit with your deductions.

Youngsters do brighten up a home. We ever saw one of them turn off an electric light?

Lady Customer—"I want a birthday present for my husband."

Floorwalker—"How long have you been married, madam?"

Lady Customer—"Twelve years."

Floorwalker—"Bargain basement is on left."

All the people in the group were grandparents, and some were feeling a bit exhausted after a month or more of babysitting on assorted small fry.

"I don't care what you grandmothers say," a grandfather spoke up. "I'm going to put in a good word for grandchildren."

"What's that?" someone asked.

"They don't go around making excuses to show everybody a picture of the grandparents."

Auto Examiner: "Do you know what means if a driver puts out a hand?"

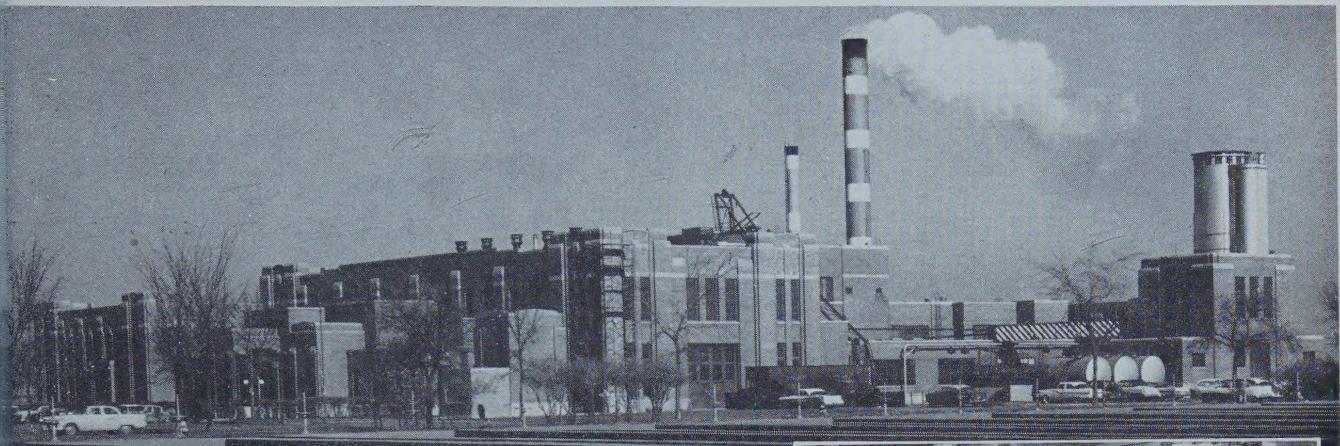
Applicant: "Well, if it's a woman, means she is going to turn right or left, shake the ashes off her cigarette, or reverse or stop, or she's drying her fingernails."

"Yeah, and if it's a man?"

"Why he's usually waving at a woman."



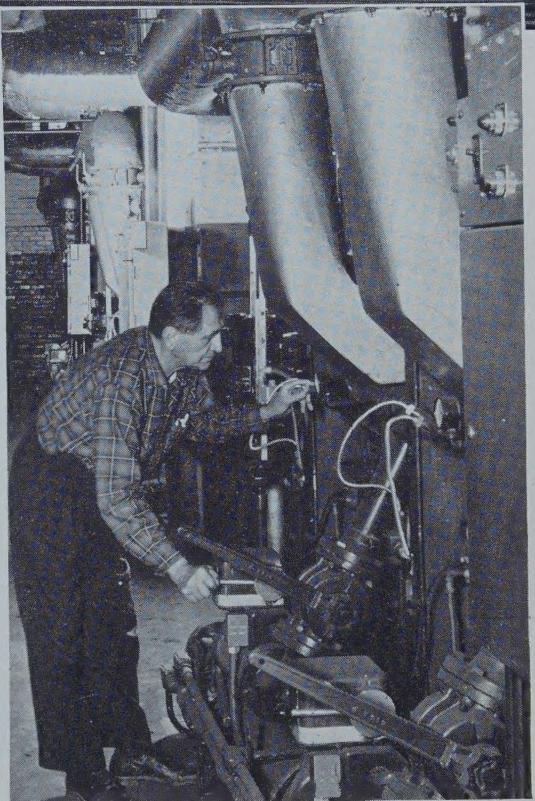
GAS AT WORK for Chicago's Industry



Calumet Sewage Treatment Works, 400 East 130th St., Chicago, Illinois

THE Metropolitan Sanitary District of Greater Chicago — often referred to as the Seventh Wonder of American Engineering — serves more than 500 square miles including the City of Chicago and 85 suburbs.

At the District's Calumet Sewage Treatment Works, Gas is being used in three sludge drying units to produce high grade commercial fertilizer. It provides fast, clean, easy to control heat with minimum maintenance. And since Gas is purchased on an economical off-peak rate basis, fuel costs are kept low.



Engineer checks operation of three story sludge drying unit in fertilizer production room at the Calumet Works. Two especially designed Gas burners in each unit provide the heat for drying.

For information on how Gas can serve you in your production operations, call WABASH 2-6000, Extension 2449. One of our industrial engineers will be glad to discuss Gas fuel and its economies as they apply to your plant.

INDUSTRIAL DEPARTMENT

THE
PEOPLES GAS
LIGHT AND COKE COMPANY



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Scott Petersen, Chicago sausage processor, is an exclusive Tribune advertiser. And used color pages to whet appetites for its 150 different kinds of sandwich meats and delicacies. Results? Demand was so great that Scott Petersen had to build a new smokehouse and double its production.

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